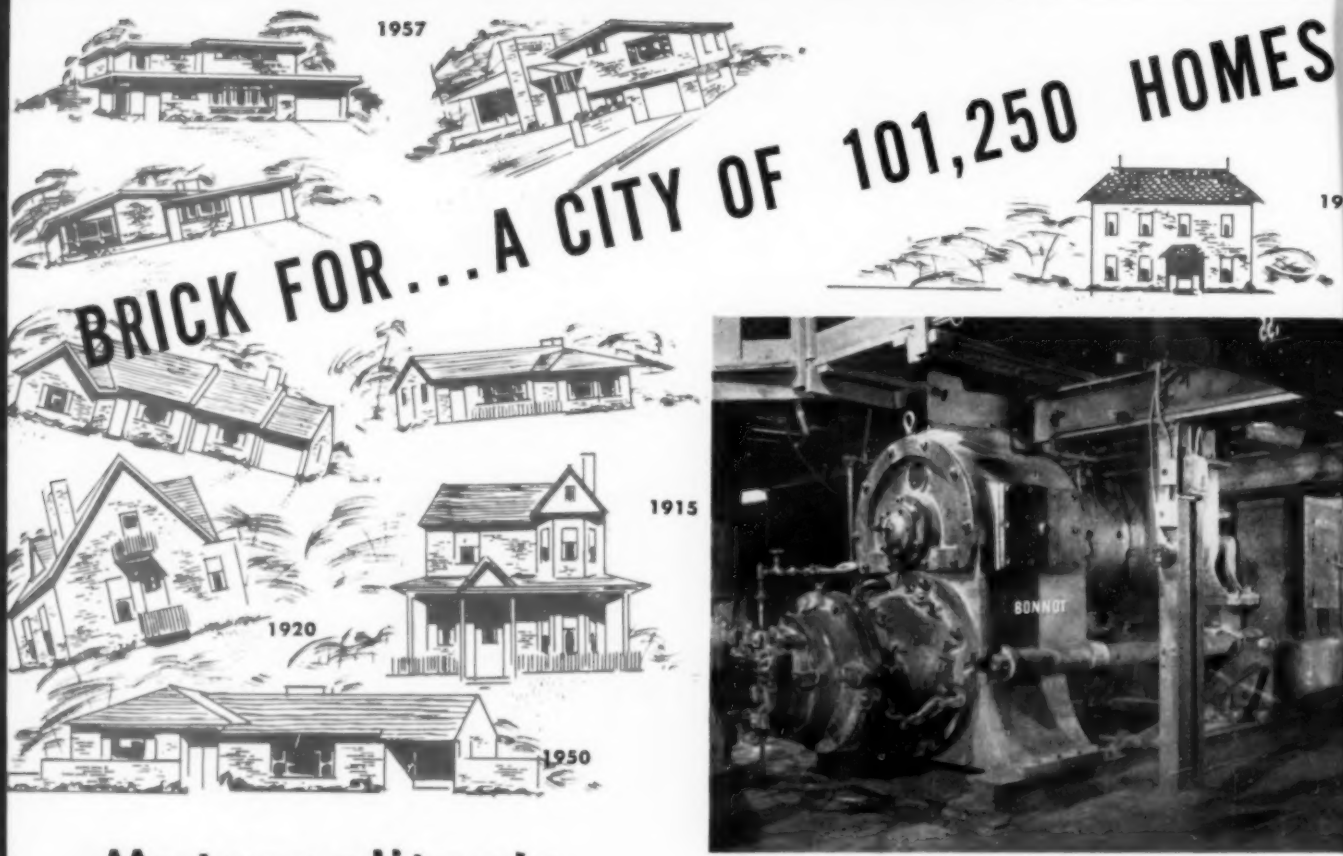
Brick & Clay Record

MAY
1957

Brick
Refractories
Structural Tile
Sewer Pipe
Drain Tile
Terra Cotta
Roofing Tile
Clay Aggregate

ANNUAL CLAY PIPE ISSUE / PEOPLE PRODUCTS PROGRESS



BRICK FOR...A CITY OF 101,250 HOMES

Metropolitan's

BONNOT SPECIAL COMBINATION EXTRUDER

has put out enough brick to build 101,250 homes and is still going strong

In 1912 Metropolitan Brick of Canton, Ohio, installed a Bonnot Special Combination Extruder in the Royal Plant. During 45 years of continuous service this one machine has averaged 90,000 brick per day, 250 working days per year — a total of over 1,012,250,000 brick; enough brick for 101,250 average size homes.

EXCLUSIVE OF MAINTENANCE — THE INITIAL INVESTMENT, PLUS CONVERSION TO DE-AIRING TYPE EQUIPMENT AMOUNTED TO LITTLE MORE THAN $6.60 PER EACH MILLION BRICK OUTPUT, PROVING AGAIN THAT . . .

IT PAYS TO BUY FOR LONG LIFE AND DEPENDABILITY

Machine performance like this re-demonstrates the value of sound designs, superior materials (original and replacement) and quality workmanship . . . is another example of why Bonnot equipment assures the user "truly low cost when all real costs are counted." Bonnot's 67 years of progressive engineering and manufacturing experience are at your service now.

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Superlite Unloaders Everywhere

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Superlite Unloaders DON'T COST — THEY SAVE!

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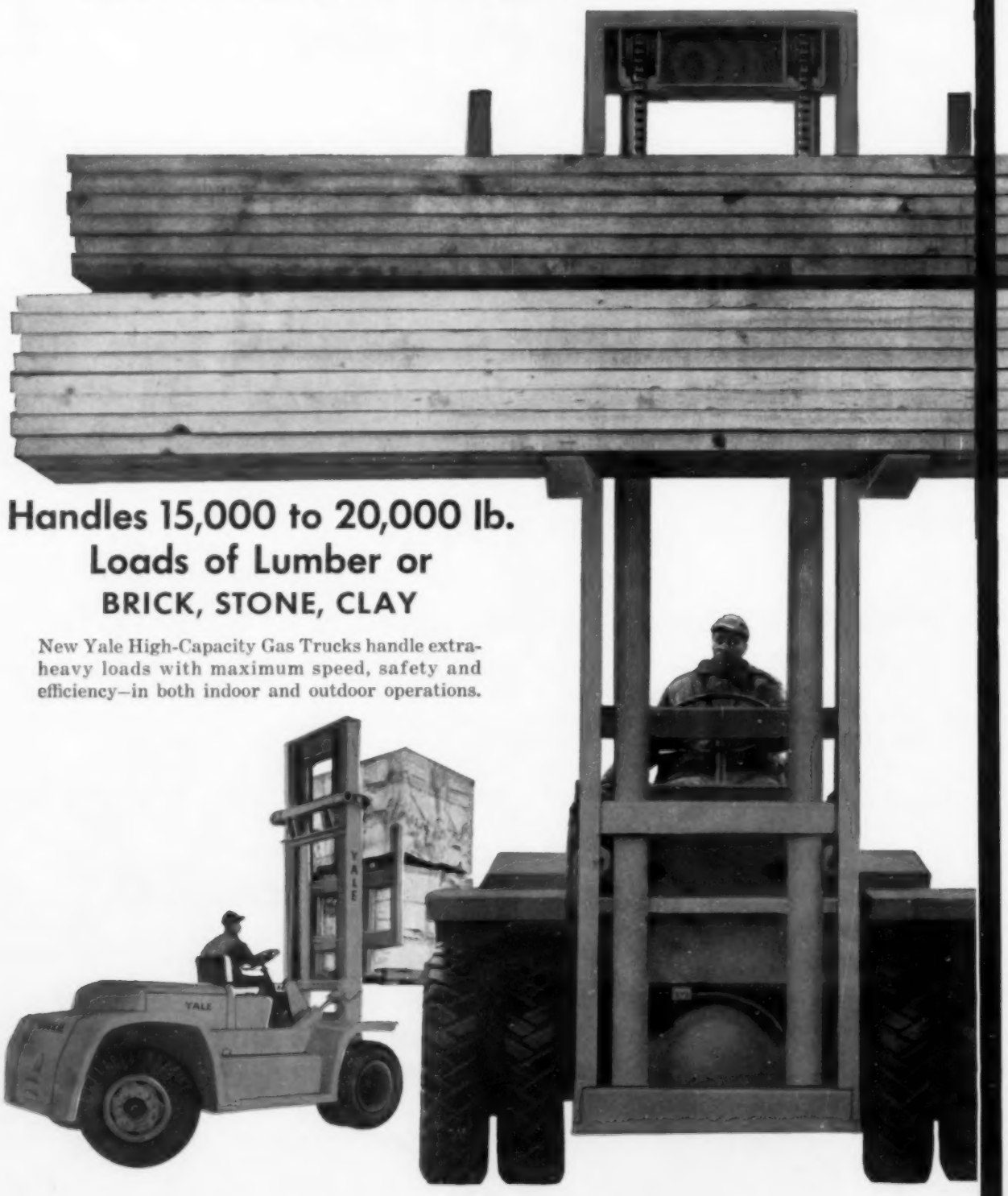
To meet the need of expanding industries for better materials handling methods, look to Yale for advances in research, engineering, manufacturing, sales and service—as

YALE BUILDS FOR THE NEW ERA

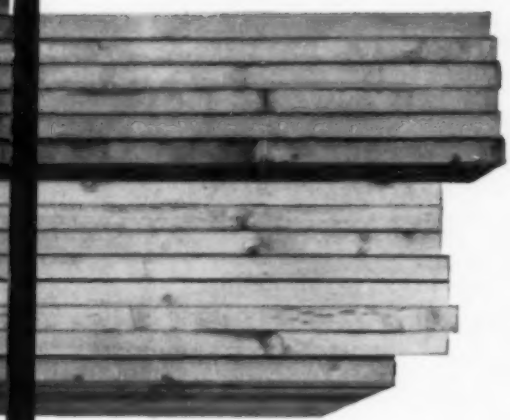
Now...first and



Handles 15,000 to 20,000 lb. Loads of Lumber or BRICK, STONE, CLAY

New Yale High-Capacity Gas Trucks handle extra-heavy loads with maximum speed, safety and efficiency—in both indoor and outdoor operations.

only high-capacity gas truck with full visibility



YALE

WIDE-ANGLE VISION

300% MORE VISIBILITY THAN ANY OTHER TRUCK OF ITS TYPE! Not just straight-ahead vision—but "corner of the eyes" vision, too—*fully functional* visibility with the big, open look of new Yale High-Capacity Gas Trucks. Operator sits high and in center. Upright channels are wide-spaced, nested to reduce frontal obstruction. Right next to them—the hoisting cylinders, one right, one left. Chains that raise carriage are in front of cylinders—*out* of the arc of vision.

Carriage has one top bar, one bottom bar—good visibility between them at all levels of fork lift. Channel cross members are at channel ends—none between. When an attachment is used, hydraulic hoses are located in front and behind cylinders—not in the line of sight. Whether looking forward or to the rear, the operator sees more. Result: these new Yale trucks with "Wide-Angle Vision" promote safer, faster, more efficient handling of 15,000 to 20,000 lb. loads.

TOP PERFORMANCE UNDER TOUGHEST CONDITIONS

Here are just a few of the premium engineering features—all included as *standard*—that give new Yale Gas Trucks a big edge in stamina and safety under all conditions:

- I-beam side members in frame for extra strength.
- Channels mounted on ball-bearing rollers to reduce friction and wear.
- Ball-mounted, self-aligning hoisting cylinders.
- Gear shift lever, plus hoist, tilt and attachment lever at right side of driver. Directional control lever conveniently located on steering column.
- Power steer with two balanced hydraulic cylinders, one to each rear wheel, to reduce stress on bearing points and linkage.
- Your choice of Yale Fluid Coupling or standard transmission.

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FAST CYCLE OPERATION. New Yale High-Capacity Gas Trucks have lifting speeds up to 60 feet per minute; fast, safe lowering; travel speeds up to 20 miles per hour; easy maneuverability.

Designed for complete selection of attachments—engineered for a minimum loss distance.

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Please send the new Yale High-Capacity Gas Truck brochure No. 5230.

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Company_____

Address_____

City_____ Zone___ State_____

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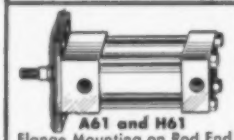
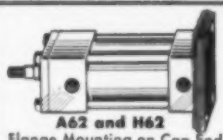
See Miller Bulletins A-105 (Air) and H-104 (Hydraulic) for Complete Dimensions and Engineering Data on these standardized "in stock" sizes and other Custom Miller Cylinders in bores up to 20" and strokes up to 22 ft.

"IN-STOCK" MODELS

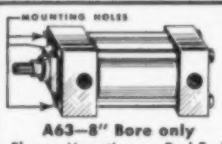
"A" Signifies Miller 200 psi Air Cylinders; "H", 2000 psi Hydraulic Cylinders. Interchangeable Mountings Are Shown In Red On Drawings.



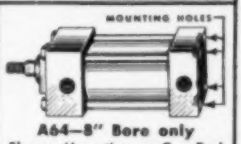
A61 and H61 Flange Mounting on Rod End (A61 not available in 8" bore)



A62 and H62 Flange Mounting on Cap End (A62 not available in 8" bore)

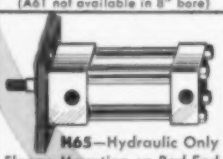


A63—8" Bore only Flange Mounting on Rod End

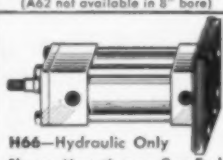


A64—8" Bore only Flange Mounting on Cap End

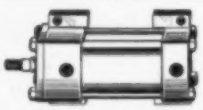
A50 & H50—Tie Rods not extended beyond nuts.
A51 & H51—Tie Rods extended both ends (shown).
A52 & H52—Tie Rods extended. Cap End only.
A53 & H53—Tie Rods Extended. Rod End only.
A54 & H54—Two Tie Rods extended at both ends.



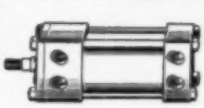
H65—Hydraulic Only Flange Mounting on Rod End



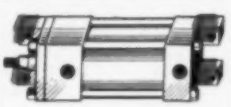
H66—Hydraulic Only Flange Mounting on Cap End



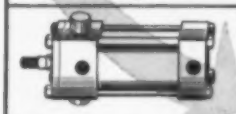
A72 and H72 Side Lug Mounting



A74 and H74 Side Flush Mounting

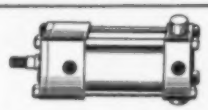


A77 and H77 Side or Foot Mounting

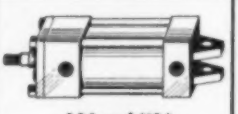


A81 and H81 Trunnion Mounting on Rod End

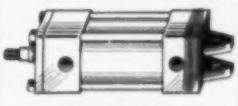
Your Choice of
CAP END CUSHIONED
ROD END CUSHIONED
or
BOTH ENDS CUSHIONED
on all cushioned strokes of all bores shown.



A82 and H82 Trunnion Mounting on Cap End



A84 and H84 Pivot Mounting



A86 and H86 Pivot Mounting

IN STOCK BORES (in Inches)

	BORES	ROD DIA.	ROD TURN DOWN & THREADS	"IN-STOCK" STROKES (in Inches)
AIR	1½	⅝"	7/16-20	Cushioned: 3 4 5 6 7 8 9 10 11 12
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12
	2	⅝"	7/16-20	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	2½	⅝"	7/16-20	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	3¼	1"	¾-16	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	4	1"	¾-16	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	5	1"	¾-16	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	6	1⅜"	1-14	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	8	1⅜"	1-14	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
HYDRAULIC	1½	⅝"	7/16-20	Cushioned: 3 4 5 6 7 8 9 10 11 12
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12
	2	1"	¾-16	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	2½	1"	¾-16	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	3¼	1⅜"	1-14	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	4	1¾"	1¼-12	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
	5	2"	1½-12	Cushioned: 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36
				Non-Cush.: 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 22 24 28 32 36

(1) "A" and "H" Models 82, 84 and 86 with strokes over 18" require stop tubes.

Column strength requires larger diameter piston rods for the following:

Air Cylinder Models A82, 84, and 86 with strokes inside area (1), when operated at 100 psi and over;

All hydraulic models with strokes inside area (2) and Models H82, 84, and 86 with strokes in area (4), when operated at 2000 psi and over;

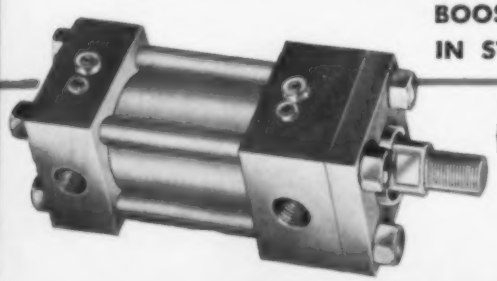
Models H82, 84 and 86 with strokes inside area (3), when operated at 1000 psi and over.

Depending upon Trunnion Pin location, "A" and "H" Models 83 with standard diameter piston rods can have longer strokes than Models 82, 84 and 86.

See Miller File #251 for oversize piston rod and stop tube requirements.

BOOSTERS IN STOCK

Immediate Delivery on the following Miller 25 to 1 Ratio Boosters (80 psi air input produces 2000 psi hydraulic oil output): Model B4, 5" bore, 1" dia. ram, 6" and 12" strokes; Reciprocating Booster Model DA77-RBA8, 5" bore, 1" dia. ram, 6" stroke. Also Booster Tanks, 5" dia., 6" and 10" heights.



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Flick-Reedy Corp

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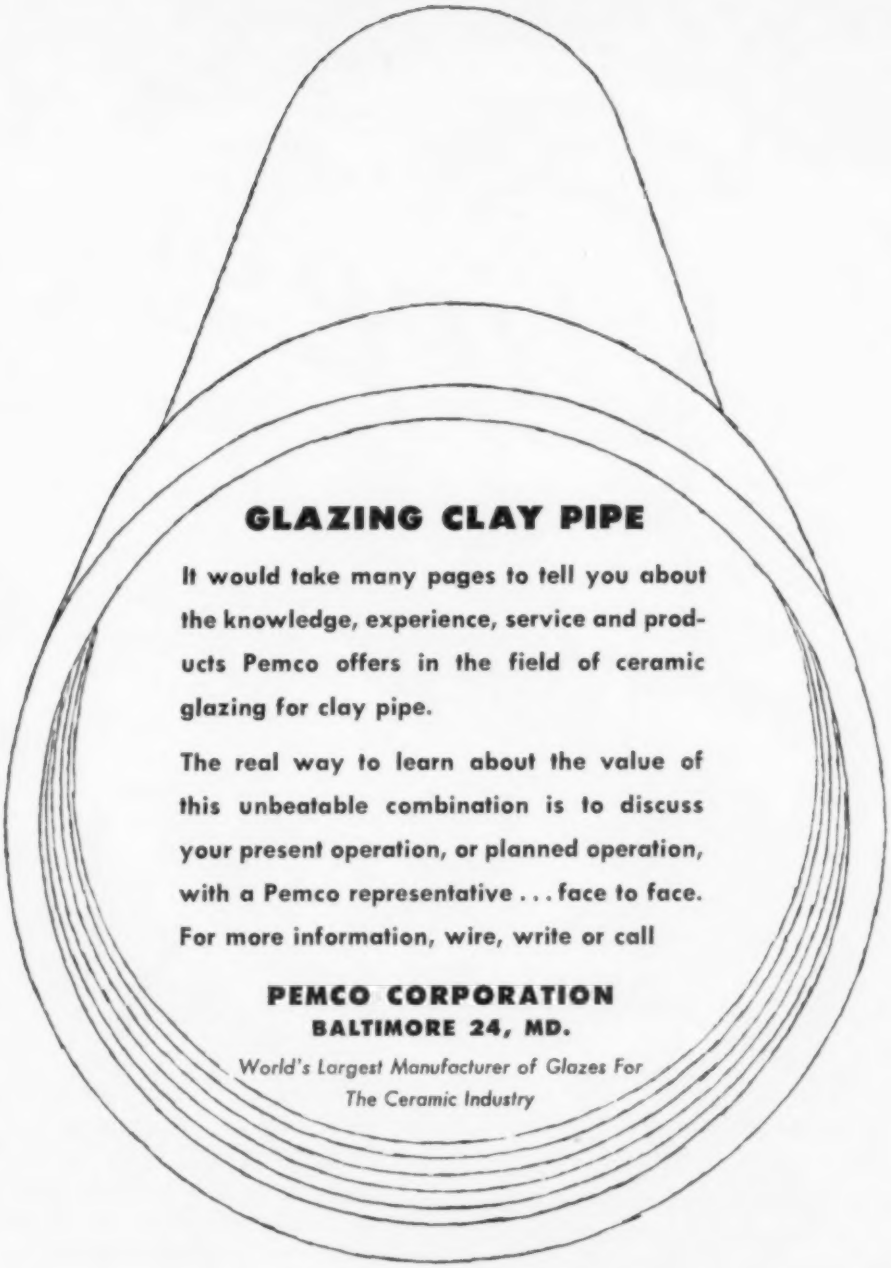
COUNTERBALANCE CYLINDERS



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It would take many pages to tell you about the knowledge, experience, service and products Pemco offers in the field of ceramic glazing for clay pipe.

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Call your Clipper Trained Factory Representative Collect and let us prove to you . . . on Free Trial . . . that we have the Best Head in the Business. Saws priced from $335. And . . . for outstanding economy, use the World's Finest Blades . . . Clipper Premium Quality.

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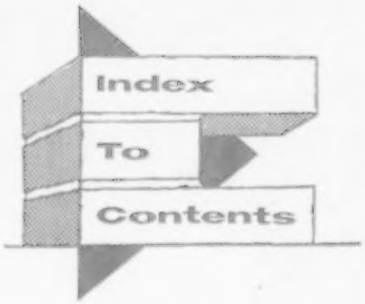

CLAY PIPE SECTION
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Still More Depletion

Editor, BRICK & CLAY RECORD—As you are no doubt aware, this Association has recently become a subscriber to your very excellent and informative magazine. Your article, "We're Winning the Big Fight," in the January . . . issue was of great interest. Here, in Australia, the depletion issue, known to us as "amortisation of land," has been a sore point for the last quarter century. So far, we have been unable to persuade the government of the Commonwealth to see our point of view.

The news that the United States government has acceded to your representatives is very heartening. We think that that information would be of considerable help in our campaign and would be very grateful if you would be good enough to obtain for us a copy of the Act of Congress giving effect to the allowance.

The position of brick manufacturers in New South Wales, in regard to taxes, is becoming very serious . . . we can obtain no concession from the Federal government in regard to depletion. In addition to this . . . we are subjected to a State Land Tax and Municipal and Water Ratings based on greatly inflated postwar valuations of property.

We are now endeavoring to convince the . . . government responsible for fixing the valuations . . . that land to a clay worker is not real estate but raw material and should have the same value per acre all over the State.

You will get some idea of the position by the fact that these taxes will cost two brick manufacturers with works in the near-city area about $3 per thousand brick this year. Common brick sell in Sydney at the equivalent of about $36 per thousand . . .

P. P. T. Edwards, Secretary
The Brick Manufacturer's Assoc.
Of New South Wales,
Australia

Merchandising

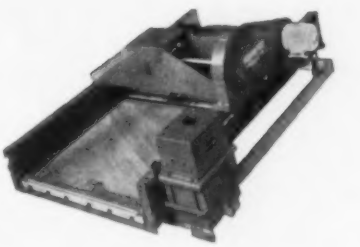
Editor, BRICK & CLAY RECORD—First, I want to say that we are delighted with the pages of merchandising stories in the March (issue) plus that fine editorial, Be a Self-Starter.

The solar screen story on page 43 does a good job of reminding the industry of the sales potential involved here. However, it raised a problem as well. I recently received a letter from Bud Berry . . . president of the Architectural Terra Cotta Institute. He had received a letter from a Texas dealer complaining . . . that the photograph in the lower left of the Public Safety Building in Austin, Tex., has an architectural terra cotta solar screen. The dealer also remarked that there was no mention of the architect, Kuehne, Brooks & Barr . . .

I think perhaps you know that the architectural terra cotta manufacturers are very sympathetic to the needs of architects and work extremely closely with them on projects using their products. Therefore . . . when they see a photograph of a building such as this they feel the architect should be mentioned . . . there was a terra cotta screen and it wasn't identified as such. I believe you can see their point of view here.

Leonard Kirsten
Director, Public Relations
SCPI, Washington

Ed. Note: Thanks to Len for catching our error here and for giving us a chance to pass proper credit to the architects involved and the terra cotta industry. The slight to those involved was both unintentional and regretted.



Efficiency of Leahy® Heated Screen Unmatched in Fine Mesh Field

For the screening of clays and shales, the Leahy No-Blind Screen with FlexElex® heating is clearly leading the field.

Flex-Elex heating is an integral part of the screen itself, not an attachment. Transmission of current from the outboard transformer is through laminated bus bars that completely eliminate bothersome flexible connectors. Efficiency in use of power is unmatched. When jackets are changed, there are no electrical connections to break or remake. Change-time is at an absolute minimum.

No other screen offers so many exclusive features. Send for Bulletin 15-J and complete information.

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— offers —
INTEGRATED HEAT SCREENING
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Bigger Profits--Less Labor Cost

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are used by "profit wise" brick plants thoughout the world

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5028 Alhambra Ave., Los Angeles 32, California

BICKERSTAFF, INC.
COLUMBUS, GEORGIA
Dealers throughout the U. S. and Canada

An important message for manufacturers of glazed brick

Architects in increasing number are writing deeply tinted and pastel colored glazed brick into their specifications for commercial buildings as well as residential structures.

As every brick manufacturer knows, this trend imposes new and different problems on production. Their solution is clearly not within the scope of normal day-to-day operations. Clays, methods and equipment vary so widely in various plants, the basic techniques of applying colored glazes must be adapted to each situation. Equally important, color formulation must be compatible with conditions and the characteristics of the brick itself.

For many years, Drakenfeld has supplied the industry with high-quality engobe stains and glaze stains. Today our "know how" can be particularly helpful to brick manufacturers in meeting the challenge of growing demand for glazed brick in a wide range of colors. Now more than ever before our complete research, color processing facilities and service can assist you in producing modern, colorful glazed brick economically and selling it profitably.

We invite you to call in one of our field engineers for a discussion of our cooperation in color research and application and our ability to serve you.

Drakenfeld

YOUR PARTNER IN SOLVING COLOR PROBLEMS

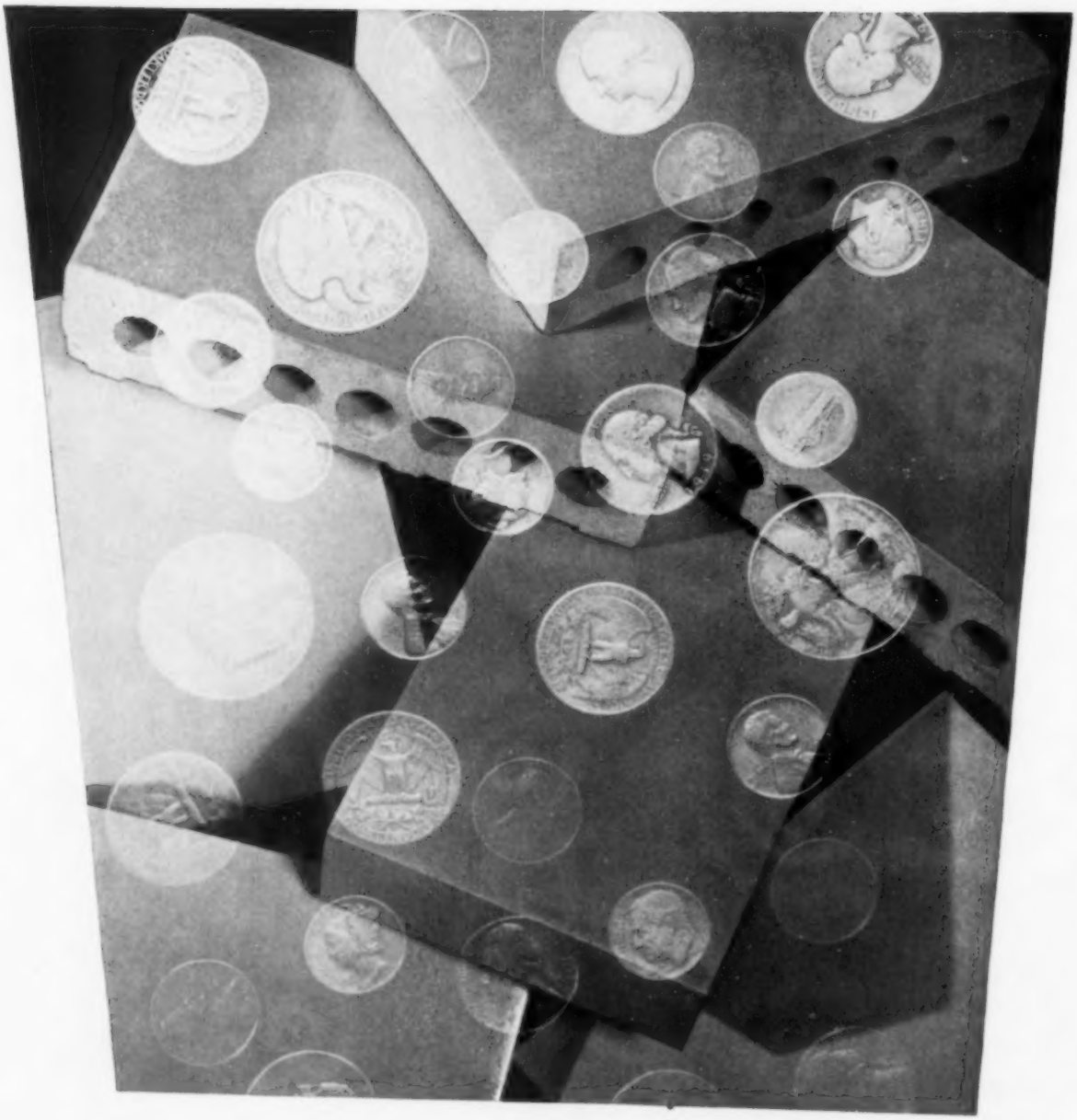
B. F. DRAKENFELD & CO., INC.

Executive Offices: **45 Park Place, New York 7, N. Y.**

Factory and Laboratories: **Washington, Pa.**

Pacific Coast Agents:

BRAUN CORPORATION, 1363 So. Bonnie Beach Place, Los Angeles 54, California—Phone: ANgelus 9-9311 • BRAUN-KNECHT-HEIMANN COMPANY, 1400 Sixteenth St., San Francisco 19, California—Phone: HEmlock 1-8080



The PROFIT is in the PACKAGE

A good glaze can be a more profitable "package" for your brick or tile product. It's a fact that a few extra cents invested in a glaze finish often returns a big profit percentage. This means it can be well worth your while to take a new look at glazing and glaze opacifiers. You can get valuable up-to-date information from your TAM field engineer or by writing our N.Y.C. office.

SAMPLE SENT ON REQUEST...

SUPERPAX* **SUPERPAX A***
Highest Reflectance
Values at Lowest Cost

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Materials Equipment Services

PLANT DESIGN—Hendryx design face brick, sewer pipe and refractories plants as well as dryers, tunnel kilns and general improvements. Dwight B. Hendryx and Assoc., 6621 Darlington Rd., Pittsburgh 17, Pa.
364/Circle on Reader's Service Coupon

ULTROX—A specially prepared zirconium opacifier, Ultrox helps to maintain uniformity of color and texture; every batch is carefully controlled for purity and particle size, fire-glaze tested to assure high quality in your production of glazed brick and tile at less cost; can be used for all ceramic glaze applications. Metal & Thermit Corp., Rahway, N. J.
365/Circle on Reader's Service Coupon

PAYLOADER—Has bucket sizes from 14 cu. ft. to 2¼ cu. yd. which can be tipped back, lifted and dumped by one lever. Floor sweeper, fork-lift and pusher-fork attachments are available. Frank G. Hough Co., Libertyville, Ill.
366/Circle on Reader's Service Coupon

CRAWLER — Koehring 605 has been stripping clay and shale 18 hours a day on one location. Boom lengths on this model range from 50 to 100 feet, drag buckets from 1½ to 2½ cu. yds. Koehring Co., Milwaukee 16, Wis.
367/Circle on Reader's Service Coupon

CONSTRUCTION NEWS — Dodge. Reports give information of who's going to build what, when and where. You can pick the areas and type of construction activity that interests you—lets you know whom to contact and when to submit bids. F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.
368/Circle on Reader's Service Coupon

CHEMICALS—Most southern brick and clay producers can get overnight service from this supplier of sulphur chemicals. Added to their offering is T-C Hydro, a high stability and uniformity agent. Tennessee Corp., 617 Grant Bldg., Atlanta, Ga.
369/Circle on Reader's Service Coupon

FORK TRUCKS—A new line of pneumatic-tired gas fork trucks has been introduced by Baker. Model FGF-40, 4,000 lb. Yard-loader features power steering, single or dual wheels and full 130 inch lift with single or dual cylinder. Baker-Raulang Co., 1271 W. 80th St., Cleveland 2, Ohio.
370/Circle on Reader's Service Coupon

CONTROLS — By Minneapolis-Honeywell reportedly have helped Merry Bros. Brick & Tile Co. produce more high quality brick at lower fuel cost in their new tunnel kiln with automatic temperature controls. Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Pa.
371/Circle on Reader's Service Coupon

BEARINGS—Besser Co. uses Timken bearings in the cam rollers, clutch and clutch shaft of its Vibrapac to take shock loads and they are said to assure steady operation and minimum maintenance. Timken Roller Bearing Co., Canton 6, Ohio.
372/Circle on Reader's Service Coupon

KILN CARS—In one plant, 150 Greenville steel kiln cars have been in continuous use for more than a year and a half without loss of production time due to kiln car breakdown. Heavy-duty, all steel cars with cast iron wheels can be pushed, fully loaded, by one man . . . cars are built to your specifications. Greenville Steel & Foundry Co., Box 1199, Greenville, S. C.
373/Circle on Reader's Service Coupon

VIBRATORS—Air or electric, portable or permanent, silent or standard Cleveland has vibrators they claim will help you handle sand, clay or refractories. Cleveland Vibrator Co., 2872 Clinton Ave., Cleveland 13, Ohio.
374/Circle on Reader's Service Coupon

AXIAL FLOW FANS—A complete new line of axial flow fans has been announced by Westinghouse. Volumes from 1,700 to 100,000 CFM . . . static pressures up to 3¼" . . . 14 sizes, Vaneaxial or Tube axial, direct connected or V-belt driven, with wheel diameters from 15 to 72". Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston 36, Mass.
375/Circle on Reader's Service Coupon

STEEL STRAPPING—The Schneider Brick & Tile Co., working with Acme Steel Strapping, has developed a method of packaging brick on jigs which is claimed to simplify inventory, improve storage and speed up loading and delivery. Acme Steel Co., Chicago 27, Ill.
376/Circle on Reader's Service Coupon

BUILDINGS—Stran Steel buildings have unobstructed floor space which makes them suitable for the clay industry. Clear-span structures are available in widths of 40, 50, 60, 70 and 80 ft. and multiples thereof. Stran-Steel Corp., Detroit 29, Mich.
377/Circle on Reader's Service Coupon

TRUCK CRANE—Handles brick or block unpalleted or palleted or packaged, unloading off either side of the truck. Driver alone can unload truck. Unit supplied ready to mount on your trailer. Bradney Machine Co., Inc., Middleton, N. Y.
378/Circle on Reader's Service Coupon

LUBRICANT—Kiln car bearings are lubricated at temperatures up to 1200 F. Belco #5016 Grease is guaranteed not to carbonize, does not harden, forms no decomposition products, eliminates dripping on tracks, cuts down pusher ram pressures, and prevents bumper damage. Bel-Ray Co., Inc., Madison, N. J.
379/Circle on Reader's Service Coupon

HARDSURFACING — Abrasoweld and Faceweld can handle 9 out of 10 hard surfacing jobs yet is reported to cost less to buy. For hardsurfacing of muller knives, conveyor worms, crusher rolls, shafts. For severe impact and moderate abrasion, use Abrasoweld; for severe abrasion and moderate impact, Faceweld. Lincoln Electric Co., Cleveland 17, Ohio.
380/Circle on Reader's Service Coupon

GRINDER—Air pressure cylinders are exclusive Chambers features which are claimed to give exact pressure control. Two to each muller, they exert a range of pressure from less than deadweight (if desired) to 10 tons per muller. Chambers Bros. Co., 52nd and Media Sts., Philadelphia 31, Pa.
381/Circle on Reader's Service Coupon

TILE GLAZES—Recent tests show that ceramists can reduce the mill addition by as much as 25% and still retain reflectance values comparable to the opacifier they were using with Superpax A for wall tile sanitary ware glazes. Titanium Alloy Mfg. Div., Nat'l Lead Co., 111 Broadway, New York City.
382/Circle on Reader's Service Coupon

CONES—Accurate checking on the maturation of ware during the high fire stage of the firing cycle reportedly can be obtained by placing cones throughout the setting. Their deformation provides a means for control of the firing progress. Edward Orton Foundation, 1445 Summit St., Columbus 1, Ohio.
383/Circle on Reader's Service Coupon

LIFT TRUCK — Allis-Chalmers builds its own engines—gasoline, diesel and gas—for its Buda Division trucks. 85 percent of the parts are reportedly interchangeable and the engine can be properly overhauled without removal from the truck. Buda Division, Allis-Chalmers Co., Milwaukee 1, Wis.
384/Circle on Reader's Service Coupon

KILN CARS—McNally Pitt built to your specifications with special heat-resisting iron, properly stress relieved. No lubricant is needed on cold rolled steel axles which are cleaned by compressed air. McNally Pittsburg Mfg. Corp., Pittsburg, Kan.
385/Circle on Reader's Service Coupon

HAMMERMILL — One manufacturer reportedly paid for his American Hammermill in less than six months' operation at the current market price of Haydite, by crushing culled Haydite blocks into reusable material. American Pulverizer Co., 1061 Macklind Ave., St. Louis 10, Mo.
386/Circle on Reader's Service Coupon

HYDRAULIC EQUIPMENT—Kiln pushers, multiple dryer pushers, automatic loading or setting track pusher systems, hydraulic transfer cars, and custom auxiliary handling devices are offered by Engineering Assoc., Inc., Asheville, N. C.
387/Circle on Reader's Service Coupon

SEWER PIPE—Complete handling and finishing assembly for sewer pipe in 4 to 12" diameters, lengths from 2 to 5' has automatic former rod, Caterpillar offbearer, automatic finishing station, automatic turner and indexer, and pumping unit. Pearne & Lacy Machine Co., Inc., Box 3366, Terminal Annex, Los Angeles 54.
388/Circle on Reader's Service Coupon

GAS BURNERS — Mineral Wells Clay Products is burning high carbon shale brick, 99% saleable, in a tunnel kiln fired by Hauck low pressure Nozzle-Mix gas burners. Reported to remove carbon without bloating, cut fuel cost 65% and cut drying time by 50%. Hauck Mfg. Co., 145-155 Tenth St., Brooklyn 15, N. Y.
389/Circle on Reader's Service Coupon

INSULATING FIREBRICK — A. P. Green has six different brick for temperatures from 200° to 3200° F. Use of their firebrick has reportedly reduced fuel costs and produced more uniform ware. A. P. Green Fire Brick Co., Mexico, Mo.
390/Circle on Reader's Service Coupon

CAR TOPS—North State Pyrophyllite reports nine out of ten users of Paco car tops are completely satisfied; facts prove that their car tops can cut replacement costs up to 50%. North State Pyrophyllite Co., Greensboro, N. C.
391/Circle on Reader's Service Coupon

VITRO PINKS — Chrome Alumina Pinks are said to be strong, easy to apply, extremely stable to Cone 12 and provide true color values without brown spots. Can be blended with other colors to produce various shades. Vitro Manufacturing Co., 60 Greenway Dr., Pittsburgh 4, Pa.
392/Circle on Reader's Service Coupon

How to Get Rush Information

If you want further information or literature describing the products in this special features, just use the handy coupon you will find on page 18. Our Reader's Service Dept. will contact the manufacturers directly and see that you obtain the requested information as quickly as possible.

PYROMETER — An improved radiation pyrometer gives spot temperatures with the press of a button. No thermocouples, lead wires, or accessories needed. Stock ranges 0100° F. to 3400° F. Pyrometer Instrument Co., Inc., Bergenfield 15, N. J.
393/Circle on Reader's Service Coupon

SHREDDERS—By Gleason are said to shred any type clay and most shales—plastic or non-plastic, and handle up to 4 tons per minute. Material moves from truck to stockpile in one operation. Gleason Foundry Co., P. O. Box 66, Gleason, Tenn.
394/Circle on Reader's Service Coupon

VIBRATING SCREENS—Syntron designs and builds a complete line of vibrating screens for practically every application of screening. Available in types and sizes for fast, efficient wet or dry screening from the finest screen problem to coarse heavy tonnage screening and sizing. Design is simple with no mechanical wearing parts. Syntron Co., Homer City, Pa.
395/Circle on Reader's Service Coupon

SCREW CONVEYORS—for all conditions and materials are manufactured by Continental Gin Co. Replacement flights—sectional, helicoid, standard or special are available from the manufacturer. Continental Gin Co., Industrial Div., Birmingham, Ala.
396/Circle on Reader's Service Coupon

PIPE SEAL—Bottle-tight clay pipe joints are now possible without the use of hot asphalt or other caulking compounds. Chem-o-sol, a specially formulated plastisol, is used to form the new Wedge-Lock mechanical joint reported to give permanent flexibility and amazing durability to prevent root displacement or seepage. Chemical Products Corp., King Philip Rd., East Providence, R. I.
397/Circle on Reader's Service Coupon

FANS—Buffalo fans are used exclusively by Interkiln-Salgo Engineering Co. in their Interkiln Tunnel Kilns which are said to be setting fuel economy records. The manufacturer will design fans for any specialized application. Buffalo Forge Co., Buffalo, N. Y.
398/Circle on Reader's Service Coupon

STOODY WIRES—Are supplied in layer-wound coils for use on automatic welding machines with minor conversions. The wire is mechanically fed to the nozzle by a motor-driven feed roll and idler roll which are actuated when the arc is struck. Stoody Co., 11937 E. Slauson Ave., Whittier, Calif.
399/Cierle on Reader's Service Coupon

POLYFON—Compounds reportedly contribute to wet, dry and fired strengths, reduce shrinkage and cracking, and give more uniform ceramic shapes. West Virginia Pulp and Paper Co., Charleston A, South Carolina.
400/Circle on Reader's Service Coupon

CRUSHER ROLLS — MECO Pioneer Crusher rolls have replaceable teeth which can be wedge-locked in place when old teeth are worn or broken. They are available in 15 sizes with capacities from 10 to 420 tons per hour. Manufacturers Equipment Co., 218 Madeira Ave., Dayton, Ohio.
401/Circle on Reader's Service Coupon

FRITS-STAINS—Hommel is supplying glaze frits both lead bearing and leadless for all types of glazed ware; body stains to meet all requirements; engobe stains and glaze stains. O. Hommel Co., Pittsburgh 30, Pa.
402/Circle on Reader's Service Coupon

HD-21 crawler tractor, 204 net engine hp
315 scraper, 20 yd heaped, 15 struck

YOU CAN STRIP OVERBURDEN AND RECLAIM LAND PROFITABLY

with this crawler tractor-scraper team

There is a marked trend toward reclaiming worked-out pits—and a parallel trend toward the use of Allis-Chalmers crawler tractors and scrapers. Both are examples of wise management.

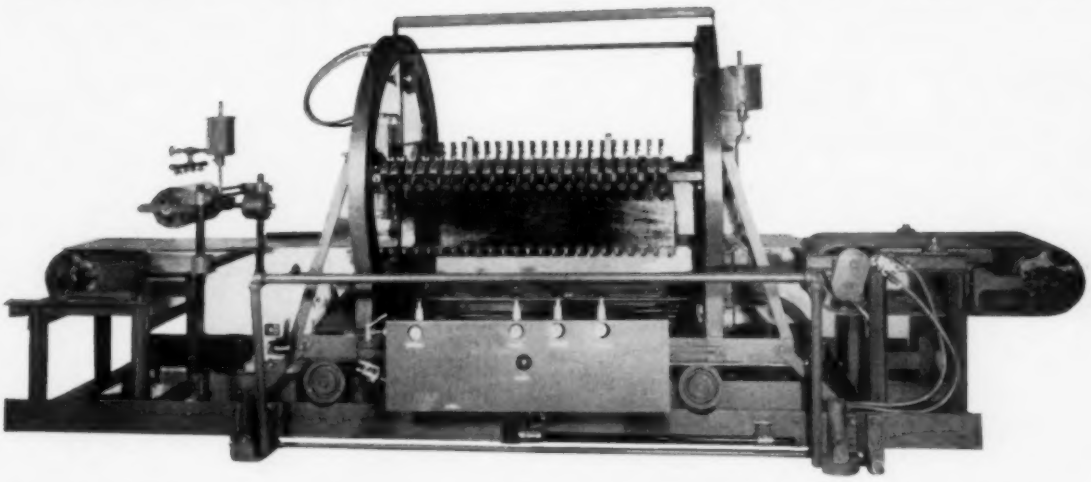
Land Reclamation—already a law in many states—eliminates to a large extent the scarred and worthless landscapes left by abandoned pits and piles of overburden. Properly reclaimed land usually returns far more than the cost of reclamation in higher resale value. Even where pits can be only partially filled, the land may be seeded profitably for pasture.

Allis-Chalmers HD-21 Crawler Tractor and 315 Scraper are ideal for this type of operation. This team is mobile and flexible enough to strip overburden and spread it immediately in a worked-out area of the pit. This eliminates the need of re-handling overburden and of calling in specialized equipment.

Curved and offset cutting edge on the scraper, plus torque converter drive on the tractor, are just two of many features that put this Allis-Chalmers team in a class by itself for this type of work. Let your Allis Chalmers construction machinery dealer give you the details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

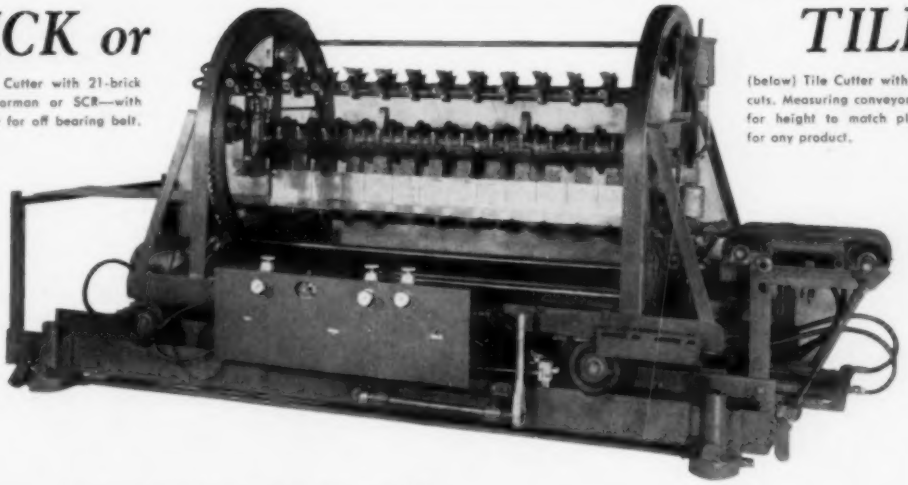
ALLIS-CHALMERS *Engineering in Action*

CHAMBERS MAKES THE CUTTERS FOR YOUR JOB!



BRICK or

(above) Brick Cutter with 21-brick platen—8" norman or SCR—with built-in pulley for off bearing belt.



TILE

(below) Tile Cutter with 12 5"-tile cuts. Measuring conveyor adjustable for height to match platen levels for any product.

CAPACITY IN CROSS SECTIONS

#32 & #33	14" x 14"	#30 & #31	11" x 11"	
	12" x 16" Green		9" x 13½" Green	
	8" x 18"			

SPEED

Max. operating:
18 Cuts/Min.

CONTROL SYSTEM — Reciprocating motions are under air control, with tied-in air clutches to actuate rotary motion. All actuating cams are adjustable to fit any production problem, and the control valves in the main panel supply sensitive control adjustment during operation.

PLATENS—For either brick or tile, platens are built at any level to provide optimum wire cutting angles. The unique Chambers adjustable platen is ideally suited for refractories manufacture. All platens are quick-change units that do not disturb the alignment of the reel and gear assembly. In any model, platen lengths of 42", 54", or 68" can be supplied. Maximum number of brick: 27 per cut. Maximum length of tile: 5 12" pieces.

SPECIAL FEATURES—Measuring conveyor (Std., 3') can be built in any length to suit plant conditions. Off bearing belt tail pulley with take-up can be supplied with cutter (see Brick Cutter above). Lifting jack assembly can be motorized on order.

ADJUSTMENTS—One-point leveling and side adjustment guarantees perfect alignment with extruder. Measuring belt can be built with vertical adjustment if platens of different levels are used (see Tile Cutter above).

Write today for further details

SERVING YOUR INDUSTRY FOR 100 YEARS

CHAMBERS BROTHERS CO. 1857 1957

52nd & Media Streets · PHILADELPHIA 31, PA.

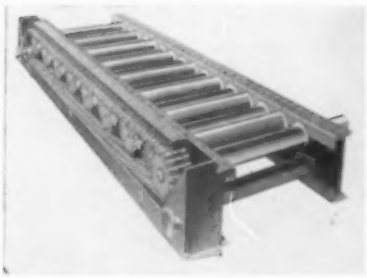
NEW equipment

THE LATEST IN SUPPLIER DEVELOPMENTS

Prime-Mover

This Prime-Mover Model M 30 is said to be quite versatile. It has a 1½ ton capacity hydraulic torque drive unit and is equipped with a hitch for towing. As many as six trailers each carrying 3500 lbs. have been towed at one time. The bulk bed inclines for ease in dumping. The Prime-Mover Co., Muscatine, Iowa.

407/Circle on Reader's Service Coupon



"Wobbler" Feeder

Pettibone-Universal Wobbler Feeder reportedly combines the functions of feeder and screen. Elliptical-shaped bars form the bed of the hopper and are set in alternate vertical and horizontal positions. Turning of these bars at the same speed in the same direction imparts a rocking, tumbling, forward motion to the load. Fines drop through spacing between the bars, oversize is delivered off the end. Universal Engineering Corp., 625 C. Avenue, N. W., Cedar Rapids, Iowa.

403/Circle on Reader's Service Coupon

Increment-Start Motors

Brook 4-pole motors, 220 volt, 1800 RPM, from 20 H.P. and up are now available for service requiring an increment-start motor. These motors reportedly eliminate need for complex switchgear. Motors to be run on 440 volt or at speed other than 1800 RPM can be built to order. Brook Motor Corp., 3553 W. Peterson Ave., Chicago 45, Ill.

404/Circle on Reader's Service Coupon

New Koehring

This new model, the 805, can be used as a crane, 2 to 3 cu. yd. dragline, up to a 3½ cu. yd. clamshell or a 2 cu. yd. shovel. Its friction type steering brakes are spring set and air power release, enabling the crawler to turn within its own length. Koehring Div. of Koehring Co., 3026 W. Concordia, Milwaukee 16, Wis.

405/Circle on Reader's Service Coupon

Master Kiln Control

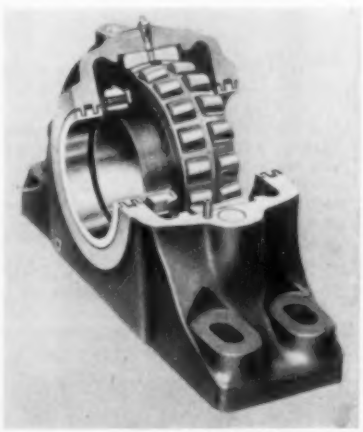
Allis-Chalmers has developed an enclosed master kiln control. The glass-fronted enclosure has all recording and indicating instruments mounted inside a pressurized sealed cabinet to prevent dust infiltration. All manual controls are located outside the cabinet in an accessible position. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

406/Circle on Reader's Service Coupon

Orzon Powders

Besides their main function of improving green strength, Orzan A (an ammonium lignin sulfonate) and Orzan S (a sodium lignin sulfonate) provide other advantages. They reportedly produce a more plastic mix with better forming qualities; give a tougher, more easily handled piece in the green state; increase dry strength in the unfired state; reduce losses from breakage and shipping; and will improve uniformity of the finished piece. Crown Zellerbach Corp., 343 Sansome St., San Francisco 19, Calif.

408/Circle on Reader's Service Coupon



Pillow Blocks

Dodge Manufacturing Corp. has announced a new line of spherical roller bearing pillow blocks. A new mounting feature is said to seat the bearings quickly and easily. New design allows a lubricant to enter at the center of

the bearing and move outward along the bearing surfaces. Dodge Manufacturing Corp., Mishawaka, Indiana.

409/Circle on Reader's Service Coupon

Clipper Accessory

The Clipper Manufacturing Company now provides a new Wheel-A-Bout accessory for use of their 2 H.P. Supermatic masonry saw. Wheels are easily attached and retract or lower without difficulty. Handles recess when not in use. Clipper Manufacturing Co., Suite 190, 2800 Warwick, Kansas City 8, Mo.

410/Circle on Reader's Service Coupon

Aluminum Blades

Available with 4 or 6 blades, in diameters from 14 ft. to 18 ft. these cast aluminum blades with cast steel hubs offer single or multiple-pitch operation. Angle settings for each operating requirement, with alternate settings are said to assure accurate pitch for any predetermined preformance. Aerovent Fan Co., 700 East Ash St., Piqua, Ohio.

411/Circle on Reader's Service Coupon

Truck Dock Boards

Lightweight magnesium truck dock boards are available from Magline, Inc., Pinconning, Mich., in lengths from 30 to 72", in widths of 36, 42, 48, and 60", totaling 40 standard sizes. Boards come in 1000 or 2000 lb. axle capacity, of all-magnesium construction. To compensate for height differences between truck and dock level, the dock boards are crowned and can be reversed when the truck bed is lower than the dock; a patented device anchors the board to prevent slipping.

412/Circle on Reader's Service Coupon

Sump-Type Pump

This diaphragm, pneumatic pump ejects fluids with 60% solids and highly abrasive liquids. Fluids and materials are bypassed from suction line directly into discharge outlet and do not contact any working parts. Dimensions are 22" high, 12" in diameter, and weight 65 lbs. The Layton Co., 4749 S. Whithall Ave., Cudahy, Wis.

413/Circle on Reader's Service Coupon

Variable Speed Motor

Increased radial load capacity on variable speed and gear motors is claimed by Sterling Electric Motors, Inc. This is accomplished through extended bearing construction on the speed reducer. The distance between bearings on the output shaft has been lengthened, reportedly increasing both radial load capacity and rigidity. Sterling Electric Motors, Inc., 5401 Telegraph Road, Los Angeles 22, Cal.

414/Circle on Reader's Service Coupon

Automatic Loading Fork

A new 3,000-lb. 48-in. Docker for use in shipping and loading has been introduced by the Automatic Transportation Co., 149 W. 87th St., Chicago. The new model, heaviest of their line, can operate in 7½-ft. aisles; can lift a capacity load of 128-in. A heavier chassis and heavier uprights set on wider centers are provided on the new model. Travel speed at 24 volts is 4½ to 5 mph; lift speed is 30 to 55 fpm; forks adjustable from 7 to 32-in.; mast assembly tilts 10 degrees backward or 3 forward, available with either monolift or duolift hydraulic lift.

415/Circle on Reader's Service Coupon

For complete information check items at right and mail coupon to:

Reader's Service
Brick & Clay Record
5 So. Wabash Ave.
Chicago 3, Ill.

No action on coupon requests can be guaranteed after June 17, 1957

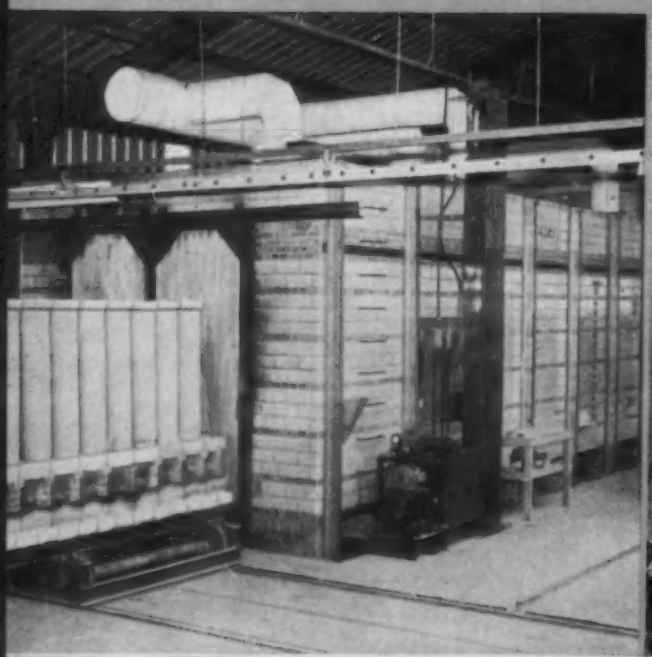
364—Dwight B. Hendryx & Assoc.
365—Metal & Thermit Corp.
366—Frank G. Hough Co.
367—Koehring Co.
368—F. W. Dodge Corp.
369—Tennessee Corp.
370—Baker-Raulang Co.
371—Minneapolis Honeywell Co.
372—Timken Roller Bearing Co.
373—Greenville Steel & Foundry Co.
374—Cleveland Vibrator Co.
375—Westinghouse Electric Corp.
376—Acme Steel Co.
377—Stran-Steel Corp.
378—Bradney Machine Co.
379—Bel-Ray Co.
380—Lincoln Electric Co.
381—Chambers Bros. Co.
382—Titanium Alloy Mfg. Co.
383—Orton Ceramic Foundation
384—Allis-Chalmers Co.
385—McNally Pittsburgh Mfg. Corp.
386—American Pulverizer Co.
387—Engineering Assoc. Inc.
388—Pearne & Lacy Machine Co.
389—Hauck Mfg. Co.
390—A. P. Green Fire Brick Co.
391—North State Pyrophyllite Co.
392—Vitro Mfg. Co.
393—Pyrometer Instrument Co.
394—Gleason Foundry Co.
395—Syntron Co.
396—Continental Gin Co.
397—Chemical Products Corp.
398—Buffalo Forge Co.
399—Stoody Co.
400—W. Va. Pulp & Paper Co.
401—Manufacturers Equip. Co.
402—O. Hommel Co.
403—Universal Engineering Corp.
404—Brook Motor Corp.
405—Koehring Co.
406—Allis-Chalmers Co.
407—Prime Mover Co.
408—Crown Zellerbach Corp.
409—Dodge Manufacturing Corp.
410—Clipper Mfg. Corp.
411—Aerovent Fan Co.
412—Magline, Inc.
413—Layton Co.
414—Sterling Electric Motors Inc.
415—Automatic Transportation Co.

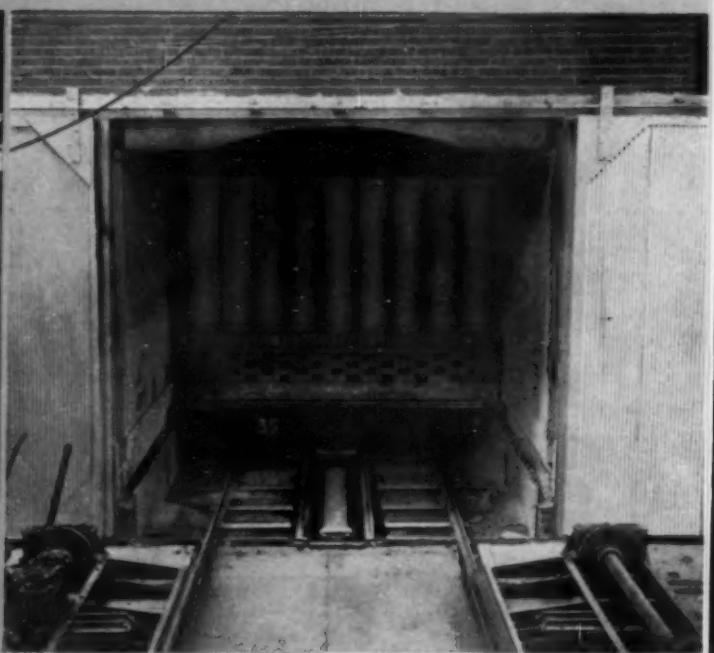
NAME ..... TITLE .....

COMPANY .....

STREET ..... CITY ..... STATE .....

.....4 reasons why leaders choose Allied Kilns for sewer pipe production!





Take a look at the leaders in this field. Note the smooth operation and consistent quality obtained with their Allied kilns—and the many special design and construction features Allied builds into such operations.

Large-tonnage or small-tonnage kilns are built to suit your exact production requirements.

Easy operation of ball-bearing car wheels avoids any inconvenience of car movement, no matter how large the car.

Easier salt glazing is accomplished through special design of the last few burners and fireboxes on each side of the Allied kiln. Outside retorts are used, which can be replaced while kiln is in operation.

All Allied kilns are designed to fit individual conditions and use local clays with complete success. Why not find out what Allied can do for *you?* Our engineers will be happy to come in and talk things over.

FERRO

FERRO CORPORATION

Allied Engineering Division

4150 EAST 56th STREET • CLEVELAND 5, OHIO

In Canada: Ferro Enamels (Canada) Ltd., Oakville, Ontario

Announcing

NEW B-200

Lakefield

Nepheline Syenite

for sewer pipe and structural clay products–

a small amount of B-200 added to your mix gives LOWER ABSORPTION, HIGHER STRENGTH

Research Data and Samples Available Upon Request to Our Agents

American Nepheline

Nephton, Ontario ★ 25 King St. W., Toronto, Ont. LIMITED

U.S. Agent: Great Lakes Foundry Sand Co., Ceramic Division, United Artists Building, Detroit 26, Michigan

U.K. and European Agent: Union Oxide and Chemical Co., Ltd., Dunster House, London E.C., 3

Make Brick Handling an Easy Job

PRIESTER BRICK FORKS

Priester Crane Fork in use at Yankee Hill Brick Co., Lincoln, Nebraska

FOR CRANE

Brick in units of any size are handled by Priester Brick Forks. Automatic operation is one of their features which simplifies and speeds brick handling.

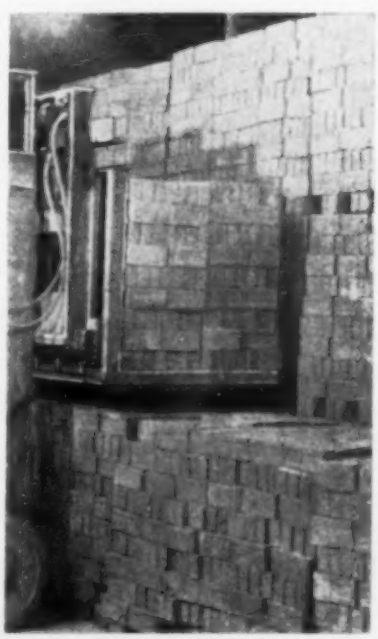
Priester forks are successfully setting and drawing kilns, loading and unloading trucks and box cars.

For cored and solid brick Priester furnishes forks with flap grippers.

"These forks give good service . . . take the hard work out of brick handling."

- SAVE TIME
- SAVE MONEY
- SAVE LABOR

Write today for more information—Ask for Bulletin LF51 covering Lift Truck Forks; and Bulletin CF52 for data on Crane Forks. We also make the Priester Truck Crane for unloading from delivery trucks; for information, ask for Bulletin TC 53.

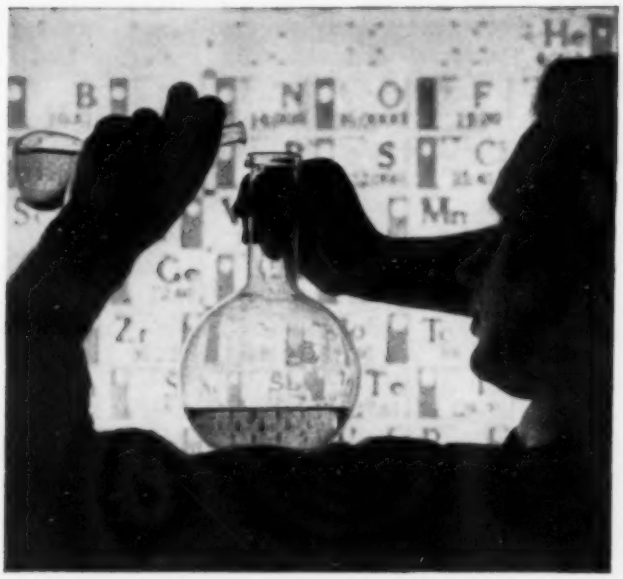


FOR FORK LIFT

Priester Lift Truck Fork on the job at Glen-Gery Shale Brick Corp., Wyomissing, Pa.

BRADNEY MACHINE CO., INC. **MIDDLETOWN, NEW YORK**

FROM VITRO—another example of research at work for you...



A UNIQUE BODY FLUX

That Lowers Firing Temperatures— Improves Quality – Increases Production

This exclusive Vitro product—called VITROMIX—is a specially-blended mixture of finely ground minerals, frits, and chemicals. It has been developed for use in regular high-firing ceramic bodies to lower maturing temperatures. Often an addition of VITROMIX, even in small amounts of 4% to 10% will make a substantial decrease in firing temperatures.

With VITROMIX, wall tile, floor tile, artware, dinnerware, and structural clay products have been produced commercially at 1350°-1500°F. in 150 minutes. In many cases production has been double, triple or even four times that obtained by the use of conventional firing methods (without VITROMIX) above 2000°F. In addition to increasing production, VITROMIX makes possible big savings in labor and fuel costs. As a bonus value, it helps to improve the quality of the ware.

Available in two different blends, VITROMIX contains no toxic ingredients, so is perfectly safe to handle. For more information on this unique body flux or for samples to test in your own plant, write us today.

Colors by Vitro

VITRO MANUFACTURING COMPANY • 60 Greenway Drive, Pittsburgh 4, Pa.

A Division of Vitro Corporation of America · West Coast Plant: 1625 West El Segundo Blvd., Compton, Cal.

This 38-B belonging to General Refractories Co., Philadelphia, Pa., is stripping overburden from fireclay near Elliotsville, Ky.

Choose Bucyrus-Erie and have *all three*— High Output, Low Operating Cost, Dependability

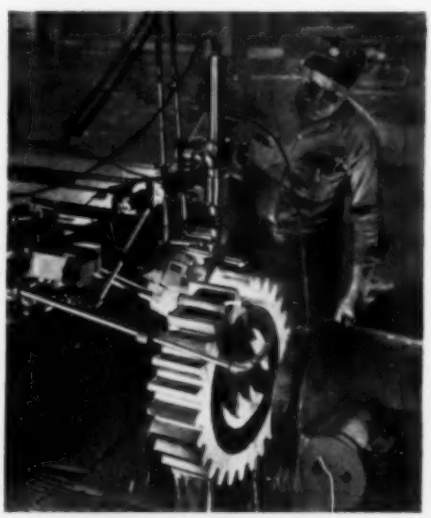
You don't need to choose among high output, low over-all cost and dependability in an excavator. Bucyrus-Erie gives you all three.

High output is assured through swift dig-swing-dump cycles, the smooth flow of power, the accurate, responsive control. Excellence of design pays off in extra yards moved every shift.

Low operating cost is traditional with Bucyrus-Erie excavators. It reflects their economical high production, their low maintenance, their extra-long life.

Dependability, day after day, year after year, is a result of the extra quality built into Bucyrus-Erie excavators, the simplicity of machinery with few moving parts, the careful engineering throughout.

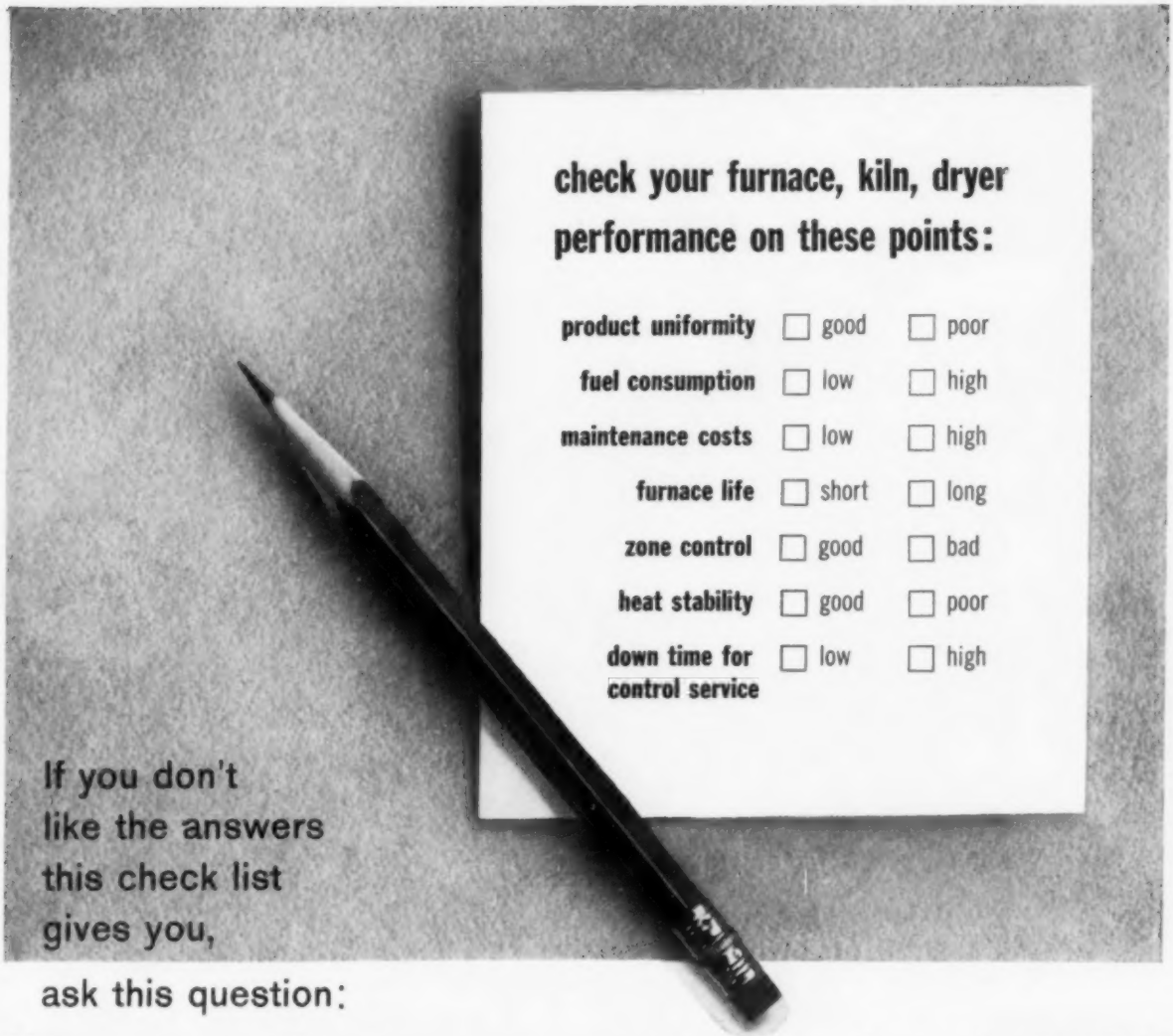
Let your distributor give you complete information on Bucyrus-Erie shovels and draglines, ⅜ to 4 cubic yards, to help bring high output, low cost and dependability to your pit and plant operations. 358E57



BONUS QUALITY is not a matter of chance at Bucyrus-Erie. For instance, gears and pinions are carefully flame-hardened to provide long life and extra wearing qualities, extra hardness where drive teeth mesh.

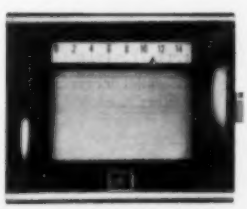
BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN


check your furnace, kiln, dryer
performance on these points:
product uniformity ☐ good ☐ poor
fuel consumption ☐ low ☐ high
maintenance costs ☐ low ☐ high
furnace life ☐ short ☐ long
zone control ☐ good ☐ bad
heat stability ☐ good ☐ poor
down time for control service ☐ low ☐ high
If you don't like the answers this check list gives you,

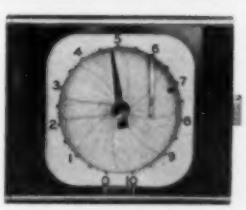
ask this question:

"Are my furnace controls obsolete?"



Strip-chart model

BRISTOL DYNAMASTER* ELECTRONIC PYROMETER CONTROLLERS



Round-chart model

Outmoded instruments can cost you money, lower product quality, and cut output of any furnace, kiln, or dryer.

New Bristol ideas are revolutionizing many older concepts of automatic control. *Bristol's great strides in electronic potentiometer development have made obsolete many instruments only a few years old.*

New product developments and production methods are placing new and unusual demands on furnace instruments and controls today.

That's why it pays to find out about the latest Bristol engineering developments before you buy another instrument or control. Take Continuous Standardization, for example—a feature you'll want on *your* next pyrometer controller. This exclusive Bristol feature, found only on Dynamaster* Pyrometers, eliminates dry cells but retains the accuracy-insuring standard cell. There's no interruption to control for standardization; no batteries to replace.

Continuous Standardization is just *one* recent Bristol development in the field of pyrometry and temperature control. To find out more, write: The Bristol Company, 170 Bristol Road, Waterbury 20, Conn.

7.15

BRISTOL *TRAIL-BLAZERS IN PROCESS AUTOMATION*

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

*T. M. Reg. U. S. Pat. Off.

SUBSTANTIAL • DURABLE • FIRE PROOF

PREFABRICATED

Pipe STRUCTURES

FOR THE BRICK AND TILE INDUSTRY

Plant Installation for Cloud Ceramics, Concordia, Kansas

Speedily Erected, Our Construction is Completely Flexible
Adapted to Your Individual Needs

Ask Any of Our Satisfied Customers

CLAY STORAGE SHEDS | KILN BUILDINGS | MACHINE BUILDINGS | STOCK SHEDS | GRINDING ROOMS

R. G. VARNER STEEL PRODUCTS, INC.

PIPE FABRICATORS • STEEL PRODUCTS

PINE BLUFF, ARKANSAS

POST OFFICE BOX 781 PHONE JEfferson 4-6030

RESULTS OF LATEST PERIODIC KILN STUDY

From 18% to 30% fuel savings

with B&W Insulating Firebrick

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
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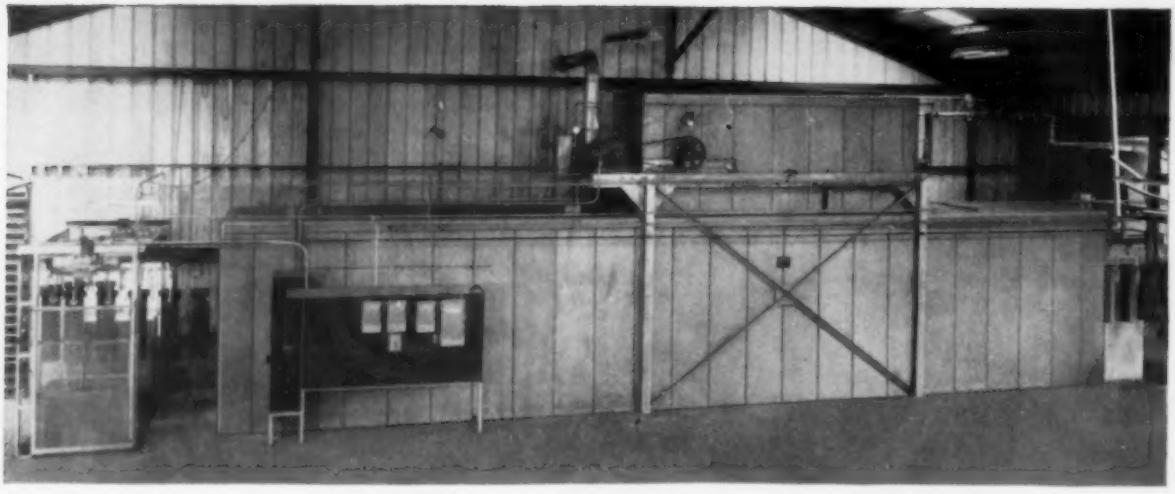


Curing Plastisol Joints on Vitrified Pipe

In a LANLY OVEN

One of many LANLY installations used in the new and rapidly expanding production of vitrified pipe with plastisol joints.

This two-pass conveyorized oven is at the Mogadore, Ohio, plant of Robinson Clay Products Company where "Wedge-Lock" pipe is now being made. A similar Lanly installation is at the Pottstown, Penna., plant of this company, as well as in plants of other manufacturers making this product in various locations in the country.

The plastic material is applied to the preheated pipe after it leaves the first pass of the oven and is cured in the second pass.

A Few of the Manufacturers Producing Ceramic Products in Lanly Dryers

American Lava Corp.
American Rad. & Std. Sanitary Corp.
American Vitrified Products Co.
Atlantic Tile Mfg. Co.
Babcock & Wilcox Co.
Clay City Pipe Co.
Corundite Refractories, Inc.
Eljer Div., The Murray Corp. of Amer.
Frontenac Floor & Wall Tile, Ltd.
General Tile Corp.
Gladding, McBean & Co.
Jordan Tile Co.
Logan Clay Products Co.
Massillon Refractories Co., The Mosaic Tile Co.
New Castle Refractories, Inc.
Robinson Clay Products Co.
Simonds Worden White Co.
Stillwater Clay Products Co.
U. S. Quarry Tile Co.
Universal Potteries, Inc.
Graff-Kittanning Clay Products Co.

Why Not Check Your Present Drying Facilities, then get a LANLY PROPOSAL Without Obligation.

LANLY
CERAMIC OVENS and DRYERS
THE LANLY COMPANY • 765 PROSPECT AVE
CLEVELAND, OHIO

It pays to take a "SECOND LOOK" before you buy a 1½-cu. yd. tractor-shovel!

Compare the "Big 4" for yourself!

Feature	TerraTrac® 800	Mfr. "A"	Mfr. "B"	Mfr. "C"
Bucket Capacity (Mfrs. rating)	1½ cu. yd.	1½ cu. yd.	1½ cu. yd.	1½ cu. yd.
Engine HP (Net)	72 (80 Gross)	70	66.5	71
Torque Converter	YES	NONE	NONE	NONE
Max. lbs. push or pull, assuming adequate traction	20,000	Not Published	15,170	12,600
Forward Speeds, MPH	(4)0 to 6.0	(4)1.7 to 6.9	(4)1.5 to 5.5	(4)1.9 to 6.3
Reverse Speeds, MPH	(4)0 to 7.0	(2)1.9 to 3.0	(2)2.0 to 4.1	(2)2.1 to 3.9
Transmission	HYDRAULIC POWER-SHIFT	MANUAL CLASH-SHIFT	MANUAL CLASH-SHIFT	MANUAL CLASH-SHIFT
Steering (1) (2) (3)	Brake-Turn Power-Turn Counter-Rotation	Brake-Turn NONE NONE	Brake-Turn NONE NONE	Brake-Turn NONE NONE
Track Frame Oscillation	YES	NONE	NONE	NONE
Dump clearance at max. discharge angle	9'1"	8'3¾"	8'0"	8'0"

Above information based on latest specification sheets available to us at time of printing.

Maybe you didn't realize it! But it's a FACT ... there's as much difference *performance-wise* between the new 1½-cu. yd. Case® TerraTrac 800 — and conventional crawler rigs — as there is between a modern *power-operated* automobile, and the old-style *"clutch-and hand-shift"* machines of 10 years ago.

Part of this difference you can see *"on paper"* — in the accompanying chart. But the real difference comes *"on the job"*, where the extra power, speed and maneuverability of the Case TerraTrac 800 is enabling owners to move up to *40% more yardage per shift.*

Compare the "big-four" for yourself. Then mail the handy coupon below, so your Case Industrial Dealer can arrange a *free* TerraTrac 800 demonstration on *your* job — soon!

CASE INDUSTRIAL

FIRST in quality for over 100 years

Clip ... mail for more proof

J. I. CASE CO., DEPT. E 1367 Racine, Wis., U.S.A.

☐ Send more facts on TerraTrac 800 tractor-shovel.

☐ I'd like a free demonstration on my job.

Name..... Position.....

Company.....

Address.....

City..... State.....

CT-L-45

Industrial wheel and crawler tractors · loaders · dozers · backhoes · fork lifts

How many machines working here?

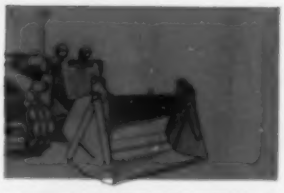
ANSWER:

FOUR!

All-in-1 International Drott 4-in-1 gives you:

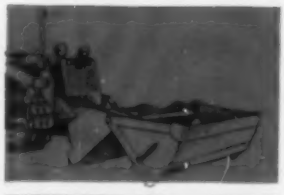
Skid-Shovel...

with Drott's exclusive "concrete shattering," triple-power pry-over-shoe break-out action — and 41" ground level bucket roll-back!



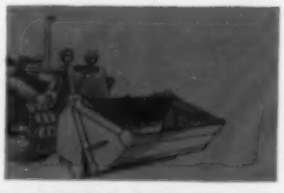
Clamshell...

that "surrounds" loose materials and fills itself in one fast gulp — gives you "hopper-high," *self-clean-out* dumping action!



"Carry-type scraper"...

offers inch-close accuracy to grade, strip, spread or compact with a simple control setting.



Bulldozer...

with clam lip up, and shoes on the ground, the exclusive radius-controlled blade 'dozes the earth with precision!

Wyandotte Chemical Corp., uses this International Drott TD-9 Four-In-One at one of their alkali plants in Wyandotte, Mich. Their versatile Four-In-One excavates, backfills pipelines, loads cinders. Here, their Four-In-One is loading waste material.

Count again! You see only one machine. But with the International Drott Four-In-One you *get four-machine* utility for one moderate investment. Switching from excavator-loader to 'dozer, to "carry-type scraper," to many-purpose clamshell—*one tool to another*—takes only a finger-tip movement of the exclusive "machine-selector" lever! You save untold hours of attachment change-over time—gain big-yardage, high income hours!

Each machine action efficiently handles a *variety* of specialized jobs, often better than a one-job machine, because of exclusive International Drott advantages. For example, exclusive triple-power pry-action break-out gives you tough-material digging force not available elsewhere. Exclusive skid-shoe load transport *plus* exclusive Hydro-Spring's shock-swallowing protection increases production, reduces downtime!

Find out for yourself! See your nearby International Drott distributor for a Four-In-One demonstration! See how your choice of Four-In-One (one to three-yard capacity) instantly gives you the material-moving action you need — stopped or on the go!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®

TECHNICAL BULLETIN

BEL-RAY COMPANY, INC.

Madison, New Jersey

BELCO #5016 GREASE

LUBRICATES KILN-CAR BEARINGS AT TEMPERATURES UP TO 1200F

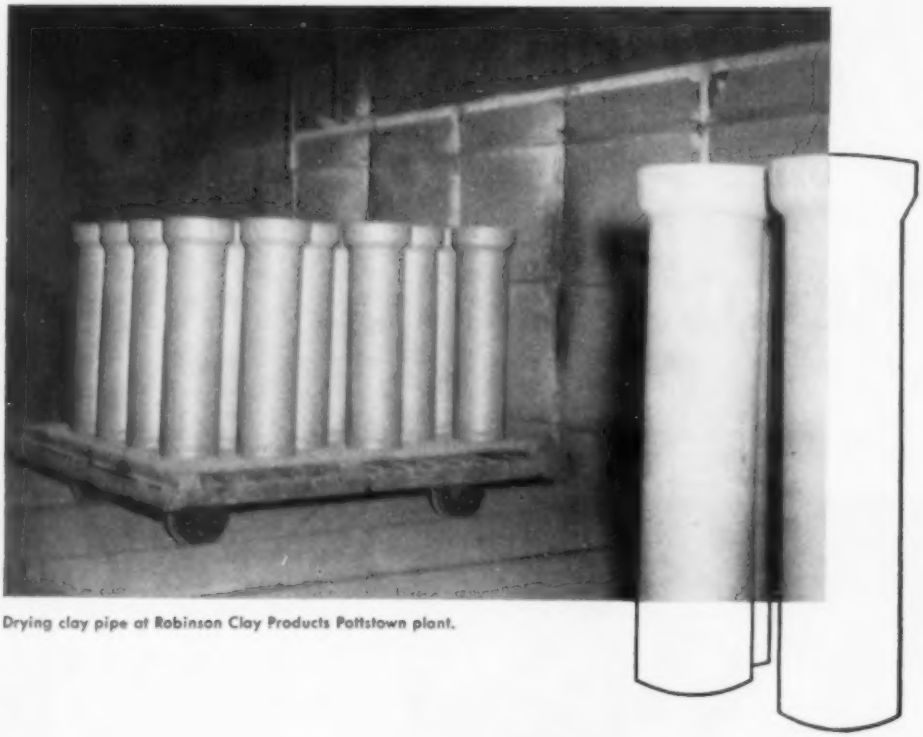
- guaranteed not to carbonize
- does not harden
- forms no decomposition products
- eliminates dripping on tracks
- cuts down pusher ram pressures
- prevents bumper damage
- keeps bearings clean and free
- lasts 3 months between regreasings
- reduces annual lubricant costs

THE WHEEL ABOVE AT LEFT with its clean, free-running bearing was photographed exactly as it came off the jacked-up kiln car. When the picture was taken, this car had been in service 4½ months since other grease residues were cleaned out and bearings lubricated with Belco #5016 Grease. Bearings had received no other care except routine regreasing 3 months after that. The bearing below, by contrast, shows caked solids from a synthetic oil formerly used at the same kiln. This particular bearing had actually been soaked in solvent and partially cleaned off. It had made only a few passes through the kiln before it became clogged with abrasive residue.

BEL-RAY CO., INC. Special Lubricants MADISON, NEW JERSEY

WRITE FOR FREE SAMPLE AND LITERATURE

CHASE



Drying clay pipe at Robinson Clay Products Pottstown plant.

CARS ARE THE NATION'S STANDARD

Clay pipe must be dried carefully and systematically. Speed of drying is determined by the temperature, humidity, and movement of the dryer atmosphere.

Chase cars are ideal and take pipe through continuous regulated controlled dryers. They are built to take advantage of the greatest possible circulation for repeat drying. Chase cars will dry your pipe gently and bring pipe through the dryer without damage. You can expect long life from the wheels, bearings and super structure of Chase cars. All are made specifically for the clay products industry. That's why Chase cars are the nation's standard.

WRITE NOW
for Catalogue and special low prices.

Chase FOUNDRY & MANUFACTURING CO.

2300 PARSONS AVENUE • COLUMBUS 7, OHIO

Brick & Clay Record

May, 1957 Vol. 130, No. 5

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CHICAGO 3, ILL.
STate 2-1374

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CONTRACTS. Formal acceptance made only at Chicago. DEADLINES. Advertising material requiring proofs must be received in Chicago by the 24th of the preceding month; Final Space Reservations by the 28th of preceding month, complete plates received by 30th of month previous.

SUBSCRIPTIONS: U.S.A. and Canada, $5.00 for One year; $10.00 for Three Years. Single Copies (Current Issue), 75 cents. Single Copy Rates for Back Issues, $1.00. Foreign Rates, $7.00 per year; three years, $15.00.

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BRICK AND CLAY RECORD is indexed by Engineering Index, Inc.

Size, Color, Newness For Sales Punch

In 1956, it has been reported, the clay products industry sold 400 million less brick for large-structure construction than in 1955. Use of brick for residential construction increased in the same period but Dr. Robinson Newcomb says the 400 million loss "more than offset the healthy gains in the residential market" He also said that unless we can recapture some of the non-residential volume we lost last year, brick sales "may not rise this year."

This is understandable in view of the new products being used in larger buildings. BRICK & CLAY RECORD was aware of the development and several times (August, 1956; February and April, 1957) warned of the danger, asking for harder selling to the big building field.

The August editorial pointed out that as a substitute, enough porcelain enamel sheets have been made to cover completely 225 buildings, each 100x100' and ten stories high. This industry by itself replaced a half-million brick, but that's a drop in the bucket compared to the steel, aluminum, glass and other curtain wall and window walls installed in large modern structures.

In trying to analyze why this should be, it becomes somewhat apparent that color, size and newness are important factors in materials chosen. It also becomes apparent that clay products must match the desirable properties that are selling the new products.

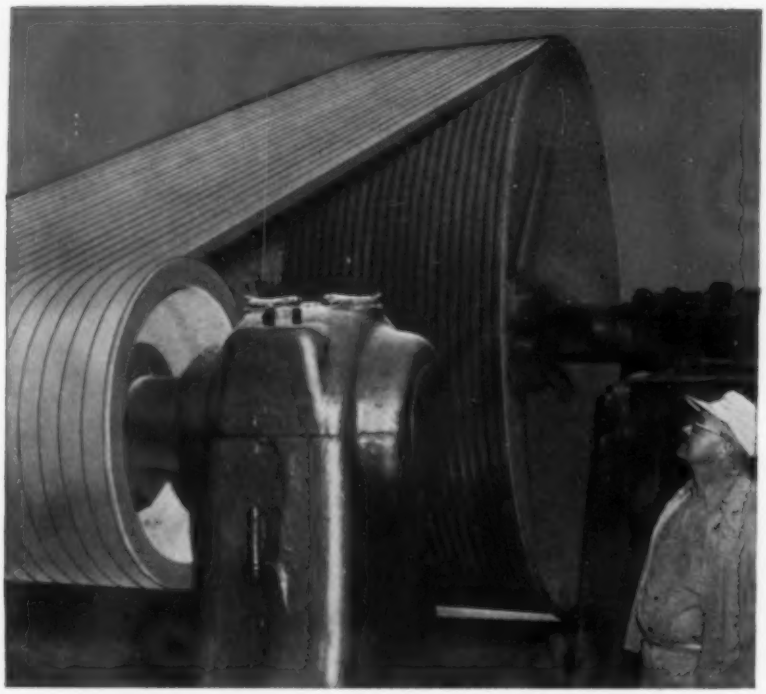
Color is extremely important. Evidently the designer is looking for more glamour than just red or buff colors. He wants greens, blues, pinks, etc. The clay industry can match these colors; demonstrations of this has been made in some jobs and in many experiments.

Size, too, is important since larger units cut handling and installation costs. This, too, is possible in clay products and is being demonstrated by terra cotta and brick panels.

Finally, newness is vital. Certainly color and size in clay products should draw attention to the newness and freshness desired by the architects and designers.

Time is important—the sooner we can produce clay products with these desired features, the sooner we'll increase sales. Let's brag about our industry's products in the same manner used by some chemical companies. When competition talks about "newness," let's point out that 80% of our products sold today are developments of the last ten years.

The Editors



Why *concave sides* insure longer V-Belt life

With one simple test you can demonstrate to yourself why the concave sides (Fig. 1) of the Gates V-Belt insure far longer belt life.

Just feel the sides of a Gates V-Belt on the bend. Note that in bending around the sheave these sides fill out and become straight (Fig. 1-A). That means the belt makes full contact with the sides of the sheave groove; grips the sheave *evenly*.

This even contact distributes wear uniformly across the sides of the belt. Uniform wear lengthens belt life; keeps costs down.

Fig. 2

Fig. 2-A

Now make the same test with a straight-sided belt (Fig. 2) and see what happens. The sides bulge out on the bend (Fig. 2-A) concentrating wear at the points shown by arrows. Uneven wear shortens belt life; increases belt costs.

Cut V-belt replacement costs and down time. Specify belts that grip evenly and wear longer . . . specify Gates Vulco Rope — the V-Belt with concave sides.

The Gates Rubber Company • Denver, Colorado

World's Largest Maker of V-Belts

There are Gates Engineering Offices and Distributor Stocks in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

TPA 150

Gates VULCO ROPE Drives

$100,000 Automation At Midland Brick

Production methods have been improved and capacity increased almost 50% at Midland Brick & Tile, reports plant manager S. E. Patek, and the plant has a completely new, $100,000 grinding set-up.

One man operates the entire grinding operation which includes 16 pieces of machinery. Equipment used in grinding includes electric eyes for control, a giant grinder, heated electric screens and much other equipment. A feature part of the grinding is the complete, automatic control operation.

In the last three years, Patek says, almost every piece of machinery in the plant has been rebuilt or replaced. Present production is from 350,000 to 400,000 brick per week.

Other work done includes elimination of much mechanical handling, paved yards, improved storage facilities and other work. A complete story on the Midland operation will soon appear in BCR.

Midland's plant is in Chillicothe, Mo.

Metropolitan Makes Keplinger Honorary Chairman

Stockholders of the Metropolitan Brick Co. at their annual meeting recognized the many years of service of C. W. Keplinger as a director and unanimously appointed him as honorary chairman of the board. The announcement was made by D. J. Renkert, president of the Canton, Ohio firm.

Keplinger, 97, has served on the board for 55 years. He was one of the first officers when the company organized in 1902, serving as assistant treasurer.

Two new directors were elected to the board. They are J. Brenner Root and Francis A. Onesto.

Renkert reported sales of $7 million in 1956, highest in company history. He also noted that the company has expended some $385,000 in plant improvements. Metropolitan will announce a new line of glazed and interior brick for interior and exterior use soon, Renkert said.

Illinois Brick Re-Elects Board; Defeats Challenge

Management of Illinois Brick Co., Chicago, recently won approval of stockholders who re-elected the seven man board of directors, overcoming the challenge of Charles E. King, a Chicagoan who has led several proxy fights at other companies.

Management nominees totaled 166,000 votes against 9,600 for King. President John Goodrich reported net income in the first 15 weeks of this year declined to $117,191, equal to 57¢ a share, from $131,749 or 64¢ a share in the corresponding period of 1956. Sales of $1,308,123 were off some 13%, Goodridge reported.

NEWS OF THE INDUSTRY

Robinson B&T Sales Up 25%, Set Record

Robinson Brick & Tile Co., Denver, reports record sales of $3 million for 1956, up 25% from $2.4 million the previous year. Net income was down slightly to $170,877 from $177,690.

The firm said two-thirds of the sales volume was accounted for by structural glazed tile, although brick continued to hold its strong market position in spite of the decline in home building.

Western Brick Adds Colors, Sizes

New colors, types and sizes of brick and tile were added to production at Western Brick & Supply Co., Hastings, Nebr., during 1956.

Jess Weyand, manager, said sales of their products were about the same as those of 1955. The new brick and tile includes Norman in buff and red; face tile in buff and red; six sizes of load bearing tile for foundations and partitions; and a new texture, Catalina, a matt face.

Plant capacity is 50,000 daily with an average of 35 employees. The company also operates a block plant with 15 employees at Hastings.

Miss-La B&T Assoc. Opens New Orleans Office

Mississippi-Louisiana Brick & Tile Mfrs. Assoc. has announced establishment of an office in New Orleans, reports executive secretary W. D. Ramey.

J. W. (Bill) Puckett will be in charge of the office. He recently completed the SCPI sales engineer course in Washington. Office location is 5149 Lafaye St., with the branch serving Louisiana east of the Mississippi River and the Gulf Coast area. Executive offices will remain in Jackson, Miss.

First Quarter Drop In Natco Sales, Income

An unaudited interim statement of income and expense for the first quarter of 1957 showed a drop of net sales and other income for Natco Corp., Pittsburgh. Both gross and net income also declined.

Net sales for the first quarter 1957 were $3.2 million compared to $5.1 million in the first quarter, 1956. Net income in 1957 was down to $114,151 in 1957 from $433,204 in 1956.

President Roy A. Shipley reported that the quarter results were not at the record-breaking level of last year for several reasons. Included were work stoppages at six Ohio plants; loss of production at the Aultman, Ohio plant because of fire; weather conditions that delayed construction during January and February.

Shipley reported that conduit shipments are expected to increase substantially this year over last year. The company has started construction of a new $2.1 million clay conduit plant near Bessemer, Ala., to go into operation later this year.

Net Income Up 22% For Gladding, McBean

The annual report of Gladding, McBean & Co., Los Angeles, shows that sales in 1956 rose to $33.5 million from 1955's $31.7 million. Net income was up 22%, with income after taxes in 1956 at $3.3 million compared to the previous year's $2.7 million.

Net income per share in 1956 was $4.25 compared to $3.49 the year before.

According to the report, capital expenditures for the company continued at "an accelerated rate." A new affiliate, Thermo Materials, Inc., was established to do research, production and marketing of specialized ceramic materials for electronics, nuclear, chemical and other industries.

Gladding, McBean expects 1957 prospects to be favorable. Several current expansion programs will be completed and the company expects to combine increased efficiency with a continued good market operation, the report states.

Quarter Sales, Net Up 13% At Pacific Clay

Net sales and other income of Pacific Clay Products, Los Angeles, for the quarter ended March 31, increased 13% over the similar period of last year, President John D. Fredericks reports. Net income was also up 13%.

Total income for the period amounted to $2.2 million compared to $1.9 for the previous year, first quarter. After all charges, net income was $288,825, equal to 56¢ a share. Comparable figures for 1956 were $256,084 and 50¢.

Despite residential construction at a reduced level, reasons for the increase were given by Fredericks as being increased activity in municipal, county and state sanitation projects; increased sales of underground conduit for telephone lines; and commercial shipments of silica sand which started from the company's new Comanche (Cal.) plant.

Plan 100th Year Celebration for AIA

Dr. Howard Mitchell (center), Director of the National Symphony Orchestra reviews plans for his musically illustrated discussion "Music and Architecture in the Environment of Man," with Edmund R. Purves (left), Executive Director of the AIA, and Doug Whitlock, SCPI's Chairman of the Board.

The American Institute of Architects celebrated its Centennial Anniversary in Washington, D. C. on May 16. SCPI, along with its affiliates, the Facing Tile Institute and the Architectural Terra Cotta Institute presented Director Mitchell and the National Symphony Orchestra to the gathering.

The program, one of the most unusual discussions of architecture ever undertaken by the building industry, explored the parallel developments of music and architecture over the centuries.

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NEWS OF THE INDUSTRY

Natco Appoints Miller Chicago Sales Manager

Walter R. Miller has been appointed sales manager of the Natco Corp. Chicago district office, effective May 1. Miller has been with Natco for the past several years and prior to that was a building contractor, according to Harry F. Toner, general manager of sales for Natco.

Fewer Plants, More Production in Canada

Canadian government reports, on the basis of an annual survey, show that there are fewer clay products plants in operation but that employment and production are up.

Only 155 clay products plants were operating in 1955 as compared to 161 the preceding year. However, employment rose from 5,973 to 6,223; net value of production rose from $37 million to $42 million.

Leading provinces in value of production were Ontario, Quebec and Alberta. Sales of building brick advanced in 1955 to $22.1 million as compared to $20.7 million the year before.

Drain tile, sewer pipe, flue linings and other products also rose in sales.

Buffalo Brick Elects Hawkins

Election of Robert J. Hawkins as vice-president and the appointment of John F. Rainear as plant manager of the Buffalo Brick Corp., West Falls, N. Y., has been announced by Stephen B. Elggren, president and owner.

Hawkins had been plant manager and chief ceramic engineer with the company since 1946. Rainear joined Buffalo in 1955 as assistant plant manager and ceramic engineer.

Elggren also announced the appointment of John V. Schmidt as assistant plant manager.

Word Payne Joins Lone Star Brick

Word H. Payne, vice president and sales manager of Metropolitan Brick Inc., Canton, Ohio, has been named executive vice president and general sales manager of Lone Star Brick Co., Fort Worth, Tex.

Payne had held the vice president-sales position with Metropolitan for the past five years.

SCPI To Start Series Of Modern Masonry Seminars

The SCPI engineering department has developed a plan to go to work on the nation's architects with a program designed to reverse the trend in non-residential construction to non-masonry materials. (See this month's editorial.)

SCPI, working with the regional association and SCPRF, plans to cosponsor with local schools of architecture a program of "Modern Masonry Seminars".

A series of five, two-hour periods of lectures and discussions will be given in each of seventeen major cities to which local architects will be invited. SCPI estimates that total number of architects reached by the seminar will be from 1500 to 5000.

The first seminar was at the University of Minnesota beginning on April 30. SCPI hopes to schedule one seminar a month, beginning in fall.

Brick, Tile Occupation Book Released by Labor Dept.

A bulletin (189) on "The Manufacture of Brick, Tile and Kindred Products" has been released by James P. Mitchell, secretary of labor, by the Bureau of Labor Standards division.

The booklet concerns occupational hazards to young workers. The book describes the manufacturing processes employed, areas and work of greatest hazard, and includes the ruling raising minimum age from 16 to 18 years in the industry, as reported here some months ago.

Britains Tour Clay Plants

Three clay products industrialists from England recently toured plants in the Uhrichsville, Ohio, area. The visitors are James Oakes, of James Oakes & Co.; Frank Kane, of Naylor Bros.; and W. Noble, of the British Ceramic Research Assoc.

Among plants toured was the new Clay City Pipe plant reported elsewhere in the news pages.

Housing, Competition Affect Milton Sales

A more competitive market has increased selling costs for Milton Brick Co., Ltd., of Canada, according to President G. M. Kelly in the annual statement.

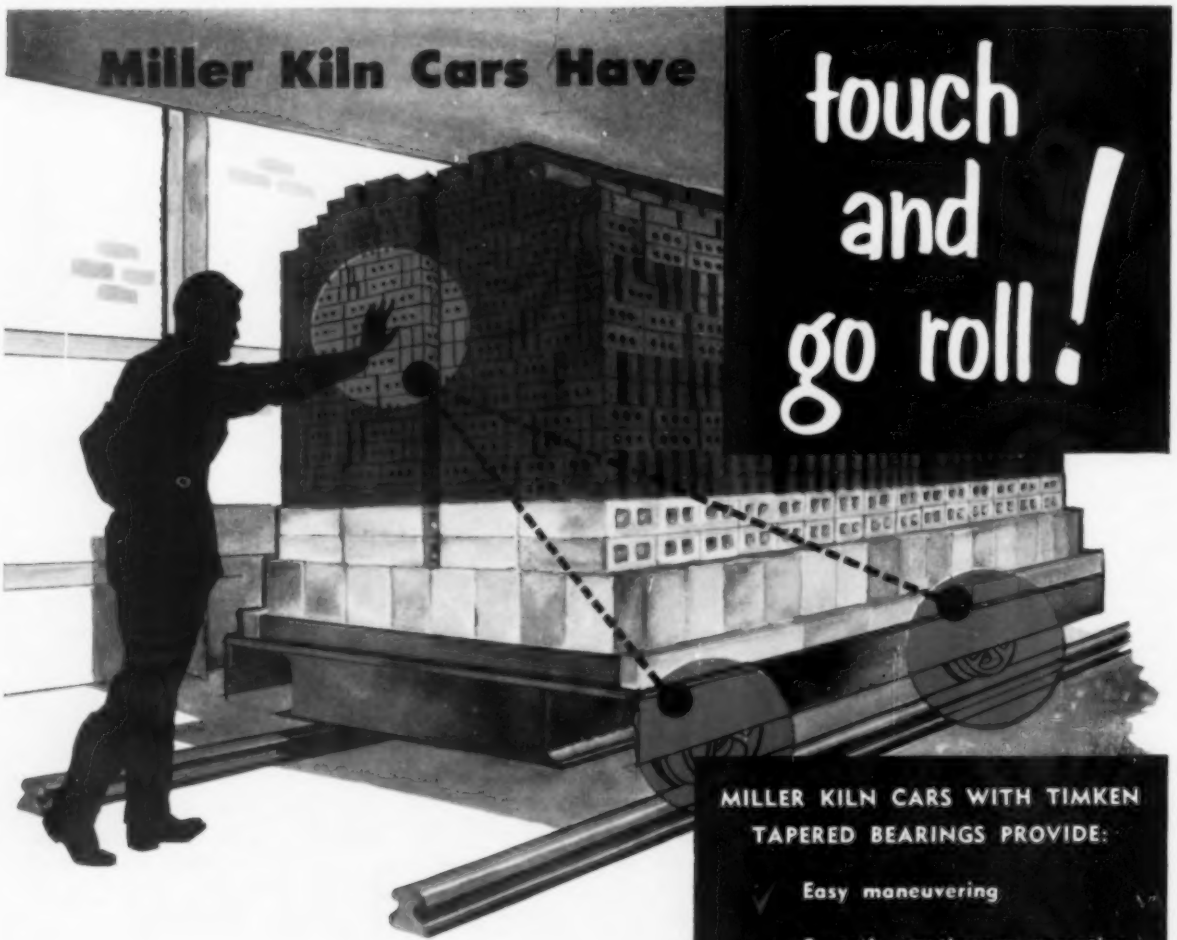
Net profit declined in 1956 to $161,092 from 1955's $221,792. However, Kelly reported other factors involved in the drop included higher maintenance costs, additional insurance costs and an initial payment on an employee pension fund.

Also a factor in the last four months of 1956 was a decrease in sales to home builders. Despite a steady market in non-residential construction, Kelly says Milton's outlook will "in part depend upon the availability of money for housing plans."

Taste of Refractory Business

At their annual sales conference, A. P. Green salesmen from Canada gathered at Toronto to be briefed on industries requirements for refractory products this coming year. Above, Ken Woollings, Ottawa sales rep, is being given "a taste of the refractory business" by general manager and vice-president George Bray. Theme of the sales conference was "What's Cooking in 1957?"

Miller Kiln Cars Have touch and go roll!



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NEWS OF THE INDUSTRY

Evens & Howard In Middle Of Four Year Expansion

$360,000 expansion program, launched two years ago, is half-way through at Evens & Howard Sewer Pipe Co., St. Louis.

Among work done and planned by Evens & Howard are adding production of 5′ diameter pipe. The company is presently modernizing their kiln setting and drawing methods by paving the areas around the kilns with four new propane-fueled Hyster trucks adding to efficiency.

Other new equipment includes Leahy screen heaters; two new Robinson dryers, each 40 x 67′; a new Michigan 1½ cu. yd. front end loader.

As part of the completed program, Evens & Howard added a new horizontal automatic pipe making machine from Chambers Bros., described in Sept., 1955 BCR.

9,000 More Tons Production Planned by Pine Hall B&P

Installation of another automatic Steele auger assembly and five automatic dryers will increase production by about 5,000 tons per year, over 1956's 29,000 tons of clay pipe products at Pine Hall Brick & Pipe co., Winston-Salem, N. C.

President F. F. Steele Jr. reports the above installation should be completed by early May.

In addition to this, Pine Hall plans new burning facilities within the next year to take the increased machine and dryer output which should give the plant another 4,000 tons per year.

Pine Hall, Steele reports, plans to be producing 38,000 tons of ware in 1958, an increase of 9,000 over 1956 and compared to output of 12,000 tons in 1945.

Before this expansion, the plant had been operating 19 kilns, one steam press and one auger press.

New Lehigh Facility Begins On May 15th

The new Lehigh Sewer Pipe & Tile Co. plant at Lehigh, Iowa is expected to be in production by about May 15, according to Joe A Bryant, vice president and general manager.

Bryant reports that the very modern plant uses automatic equipment by Pearne & Lacy, two horizontal extruders by F-R-H, and a 400′ long, 10′ wide, 5′-high setting Allied tunnel kiln.

In addition, the Lehigh plant will use an Eagle senior crusher; all conveying equipment is by Link-Belt. Bryant also notes that control instruments used are Minneapolis-Honeywell with Westinghouse electric motors and switch gear.

9 More Awarded SCPI Sales Engineer Certificates

Ross O'Brien Shepherd Puckett Wright

Gatlin Todd Redmon Jones

Nine more brick and tile men have graduated from SCPI's Sales Engineer training course, bringing the total now to 120 men who have completed the course.

The new graduates are: E. H. Gatlin, Jr., Texas Clay Products Co.; G. Raymond Jones, Harrisonville Brick Co.; Francis R. O'Brien, Waldi Bros. Co.; J. W. Puckett, Mississippi-Louisiana Brick & Tile Manufacturers Assn.; Karl M. Redmon, Hattiesburg Brick Works.

Also, L. E. Ross, General Shale Products Corp.; Donald Shepherd, Denver Brick & Pipe Co.; Orville Todd, Henderson Clay Products; H. M. Wright, L. E. Shaw Ltd., Halifax, Canada.

TRI Members Tour H-W Windham Plant

178 TRI MEMBERS as part of the recent Youngstown meeting toured three plants. Unavailable for last month's issue, shown here is a picture of members touring the Harbison-Walker plant at Windham, Ohio.

Alfred To Hold Clay Symposium

A symposium on structural clay products, designed for undergraduates in the field but open to anyone else interested, will be held June 10-28 at State University of New York College of Ceramics at Alfred University.

Dean John F. McMahon reports that 40 guest lecturers, including engineers and scientists, will take part in the symposium.

Topics presented will consider such phases as raw materials, processing, drying, firing, applications and research.

Requests for further information should go to Dr. Wayne E. Brownell of Alfred University, Alfred, N. Y.

HERE'S OPEN-ROAD PERFORMANCE

. . . plant-yard size

The Allis-Chalmers Model D is a full-fledged motor grader. It is used extensively on road construction and maintenance jobs where only the finest grading performance is acceptable.

It has the basic design and performance features found in machines costing up to three times as much, but there is one important difference: The Model D is compact and maneuverable enough to maintain plant roads and yard areas where other graders cannot operate.

To add still further to its usefulness around industrial plants, the Model D may be equipped with a rear-mounted, ⅝-cu yd loader for stockpiling, loading and snow removal jobs. Optional cab offers year-round operator comfort.

Let your Allis-Chalmers dealer show you how the Model D can give you open-road grading ability in the confined areas of your plant yard. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

NEWS OF THE INDUSTRY

$1 Million Clay City Pipe Plant To Begin Soon

Being rebuilt at a cost of more than $1 million, the new Clay City Pipe Co. plant at Uhrichsville, Ohio, will replace a 32-year old structure destroyed by fire last year. Operation of the new plant is expected in late spring.

Nearly completed is a 123,000 sq. ft. building which will house 16 drying compartments, storage bins, pipe-making equipment and a 300′ tunnel kiln.

Outdoor periodic kilns are being converted for gas firing and will be roofed for all-weather operation.

New machinery being installed includes a vertical Stevenson press, two horizontal extrusion machines, three F-R-H pug mills, two Pearne & Lacy take-off machines. In addition to the new kiln, there'll be an 80′ pre-heater.

Fred McCauley, General Manager

Pipe made will be in lengths up to 6′ and in diameters of three to thirty inches.

The sixteen drying compartments will range in size from 22 x 80′ to 40 x 100′. Fourteen drying compartments will be of the "hot floor" type with 8" ceramic ducts conducting under-floor heat; two will use raised steel grill floors. Total drying space will be about 35,000 sq. ft.

Handling of pipe will be done by fork lift trucks. The building itself has cast rigid frame, structure steel support and aluminum sheet sidings. Translucent plastic panels will provide natural lighting. Plant and storage yards cover 10 acres, with 3 acres under roof.

Aside from pipe types and sizes previously made by Clay City, Wedge-Lock pipe will be made in an already constructed building. Die-cast bituminous jointed pipe will also be added to the line.

Recently named company officers jointly supervising rebuilding and operation of the plant are Fred McCauley, general manager, and Hudson Hillyer, assistant general manager. Harold Willard is sales manager; W. A. Arthurs is plant superintendent; and W. E. Palmer, chief engineer.

McCauley is the son of J. J. McCauley, 86, president. Clay City owns and operates three plants and also operates the Bowerston Shale Co. with plants at Hanover and Bowerston, Ohio.

Reinforced Brick Masonry Featured

Reinforced Brick Masonry was the featured display by Region #12, SCPI at a western regional engineers convention sponsored by the Colorado Society of Engineers and held in Denver, February 28 through March 2.

It is estimated that approximately 1600 Engineers, Architects, construction industry management personnel and representatives of industry and education viewed the interesting, eye catching display by Region #12. The display pointed out the many desirable design features of Reinforced Brick Masonry for use in structures of all types.

In addition to the display R. B. M. design and specification kits were presented to representatives of civil and structural engineering firms, attending the convention in the Queen City.

Union Brick Installs New Brick Machine

Installation of a 26-ton J. C Steele brick machine was recently done by Union Brick Co., San Diego, Calif., according to President John Rice.

The machine will be housed in a new building at the plant. With capacity of 24,000 brick per hour and 60′ long, the machine was shipped from the Steele plant in Statesville, N. C. by ocean freighter. Capacity of the machine is 100% more than that of the one used for the last several years, Rice reports.

H. Hillyer

W. Palmer

H. Willard

W. Arthurs

PERSONALS

George W. Jones, Jr., has joined the Southern Lightweight Aggregate Corp., Richmond, Va., as Solite representative in the western areas of Virginia and North Carolina, according to **A. Cabell Ford**, sales director.

Wayne Schelldorf has been appointed sales engineer for Des Moines (Iowa) Clay Co. to handle contract work in central and southwest Iowa, according to general manager **Bruce Patterson.**

The new Clay City plant with new buildings in front

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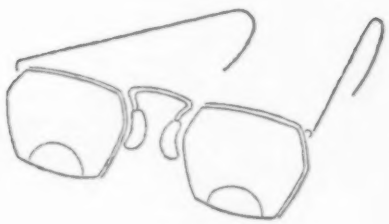

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NEWS OF THE INDUSTRY

SCPI Depletion Committee Meets

SCPI DEPLETION COMMITTEE—Planning the next steps in SCPI and the industry's fight for a fair break in depletion matters was the subject of this meeting in Washington recently. From left are Roy Shipley, SCPI board; Willis Snell and William Sutherland, tax attorneys; Kenneth Dunwody, depletion committee chairman; Douglas Whitlock, SCPI board chairman; Norman Crissey and D. J. Renkert of the depletion committee. The January article on the history of the depletion issue in BCR drew more mail and requests for copies than any article in the past few years, as can be seen in Letters to the Editor in recent months.

William B. Franke, former chairman of General Shale Products Corp., has been nominated by President Eisenhower to be Undersecretary of the Navy. He will succeed Thomas Gates, who now is Secretary of the Navy.

S. R. Gurley, Jr., and **E. W. Valensi** have been elected directors of the Refractories Institute. Gurley is vice-president and general manager of Laclede-Christy Co., division of H. K. Porter Co., Inc. Valensi is president of North American Refractories.

James G. Tuthill has been named president of Tuthill Building Material Co. of Chicago. He replaces **Carl Bach, Sr.,** who recently resigned from Tuthill.

Tuthill

Prior

Harold D. Prior has been appointed technical director of the Charles Taylor Sons Co., National Lead Co. subsidiary. His headquarters will be in Cincinnati.

Obituaries

Manuel Claparols—63, president of Medal Brick & Tile Co. of Wooster, Ohio, died March 29.

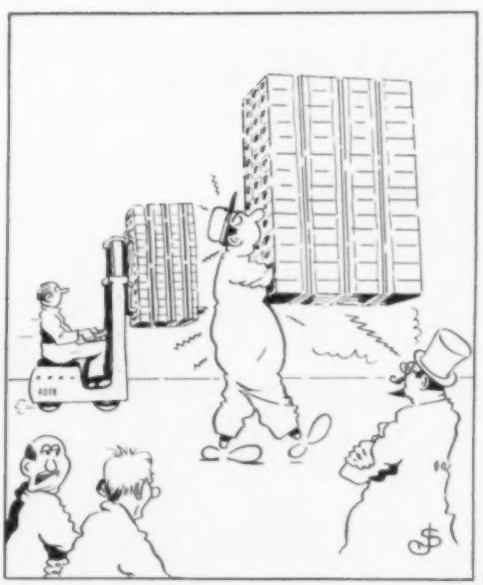
Three 30-year veterans of **Harbison-Walker Refractories Co.,** Portsmouth, Ohio, were honored April 11, at the annual meeting of the firm's Quarter Century Club. The dinner program was held in the Four Keys Restaurant. The veteran employees are **Samuel Hamilton, Tim McClain** and **Cecil Hamilton,** all of Portsmouth Works, who received cigarette lighters bearing service emblems from **E. T. Hile,** company vice president.

PERSONALS

William C. Jones has been appointed sales promotion manager, Franciscan division of Gladding, McBean & Co., Los Angeles.

J. E. Brinckerhoff, manager of the Babcock & Wilcox Co. refractories division, has been elected a B&W vice-president. He joined the company in 1919.

Paul V. Hennessy has been named as a civil engineer with the pipe products division of Gladding, McBean & Co., Los Angeles. His headquarters will be in the San Francisco office.



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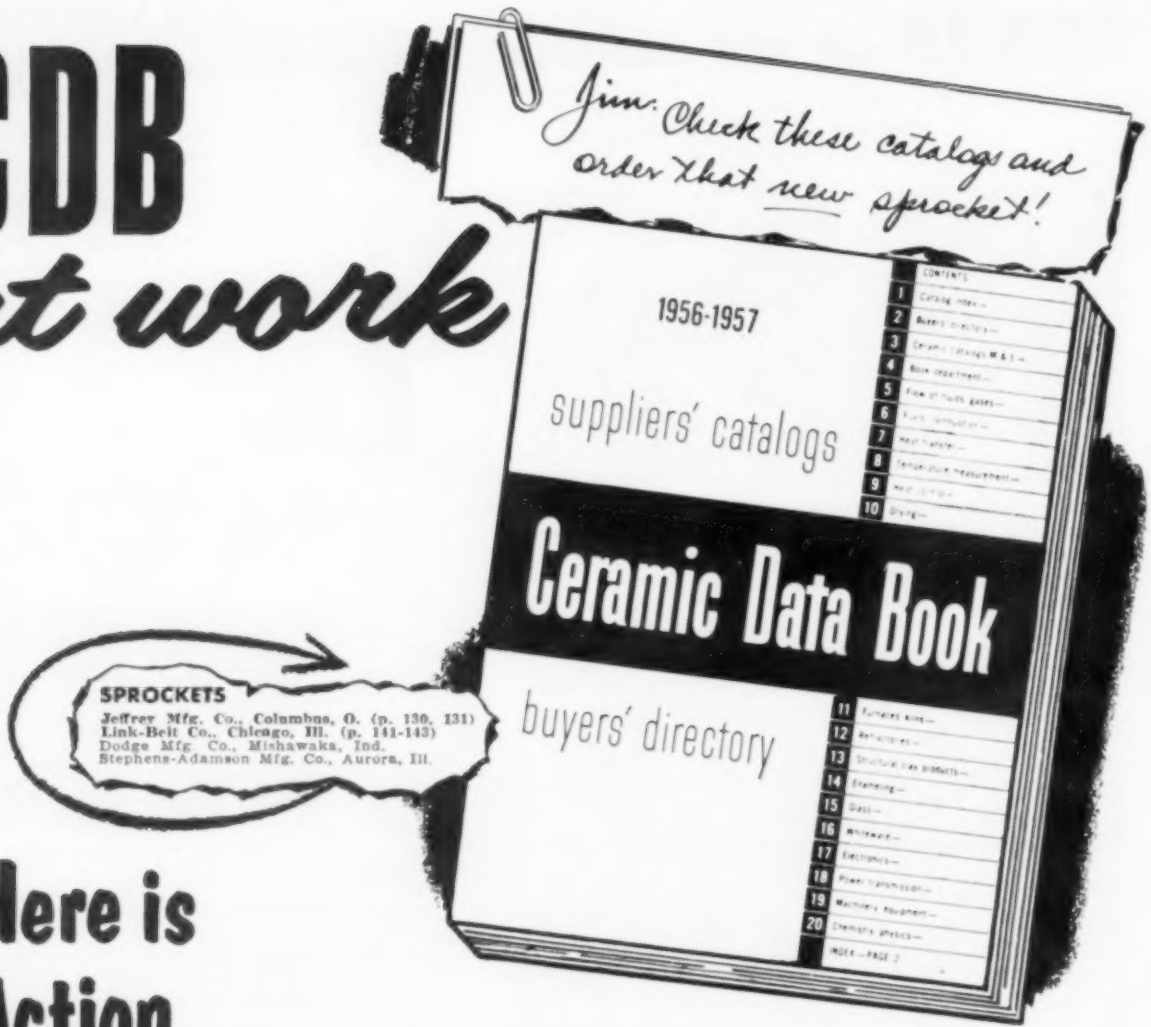
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SPROCKETS
Jeffrey Mfg. Co., Columbus, O. (p. 130, 131)
Link-Belt Co., Chicago, Ill. (p. 141-143)
Dodge Mfg. Co., Mishawaka, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.

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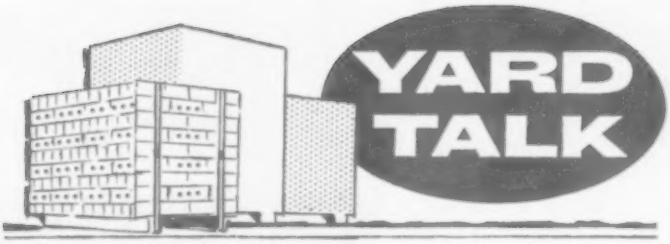

A wheel-mounted brick making machine has been patented by Dino Morelli of Pasadena, Calif. and by Ben Pinsker of Hollydale, Calif. Machine scrapes clay from the ground, breaks it up, mixes it with some "oily" liquid, and presses into brick shape. As it moves along, the machine smooths the ground where the clay was removed so that the brick can be stalked there to dry. The mobile plant is intended for areas where there isn't enough demand to justify a permanent plant. The unit is mounted on a truck and is operated by the truck engine. That's all we know about it, but we'll try to get a picture if possible.

Roy Horning, vice president of Lancaster (Pa.) Brick Co. reports that plans are moving along for rebuilding following the recent severe fire on March 19. Horning says they'll make no basic changes from the previous operation; rebuilding cost should be about $150,000.

Westmoreland Clay Products Co., Greensburg and Washington, Pa., have plans to install a new kiln and driers, with manufacturer as yet undecided. Although John C. Mullin, secretary-treasurer, doesn't say so directly the new kiln will evidently be a tunnel with related equipment. Cost figured to be about $400,000 for the new equipment with construction starting in 1958 for modernization and expansion of facilities. They haven't decided yet on what new products might be added.

President Charles Denison of Delaware (Ohio) Clay Co. reports that the company has just completed plant conversion to high grade face brick; installed gas for burning in the tunnel kiln; and has started erecting at their shale pit a new Eagle automatic electric shale planer.

Brick aimed at gardeners was stressed by Kendrick B&T, Monroe, N. C. at a recent Carolina Home & Flower Show in Charlotte. Iden was to show how good brick can look when used for outdoor planter boxes, walls, walks, terraces and other garden trim. Kendrick also has displays at their Charlotte office aimed for the gardening group.

Two safes at the Big Savage Refractories Co., Frostburg, Md., were opened recently by unauthorized personnel with $400 taken by the safecrackers.

In January, we asked the name of the brick salesman who appeared on "Peopel Are Funny." The answer came from Stanley May, president of Maybow, Inc., who was the man. We also inquired after the name of the brick company on another tv show . . . and are embarrassed to report it turned out to be a concrete brick plant.

Brick, Inc. of Denver is underway on a complete remodeling program which will include a face lifting for the front of the building, addition of new parking facilities, improved bin storage system, and new loading docks for company trucks and customer vehicles.

F. J. Ford tells us that he's building, through Harrop Ceramic Service Co., a new car tunnel kiln and dryer plant for Western Clay Mfg. Co., Helena, Mont. Ford says that this is an extension of a progressive program started by the founder of the company years ago. Archie Bray, Jr. is the grandson of the founder. The new kiln with dryer-preheater is designed to dry and fire building brick, structural tile and flue lining when set green on the kiln car at a rate Ford reports as 25,000 equivalents per day. He's promised to send us some pictures later, and more information.

North American Refractories Co., Cleveland, has been doing a lot of modernization at their plants recently. S. P. Pejeau, secretary, tells us they've put in a tunnel kiln at the Farber, Mo. plant as well as a continuous dryer; added at the Curwensville, Pa. plant was a battery of batch dryers. Company plans still more expansion and modernization including a new plant at Farber with construction started in early February, to be finished the last of December. New products planned include high fired.

Industrial Engineer Works has been given the contract to fabricate and erect the structural steel at the new plant addition of Valenine Fire Brick Co., Woodbridge, N. J. Plans reportedly call for 100' long clear span roof trusses.

Hauls 1-ton with hopper or platform

Take a new look at Kwik-Mix R-15 Moto-Bug. Automatic power-flow transmission eliminates clutching and shifting — increases power, speed, and gradability. It now travels 12 m.p.h. forward and reverse — climbs 25% grade with 2000-lb. load in hopper or on platform. 15 or 18 cu. ft. hopper is interchangeable with 34 x 54-in. platform — hauls 1-ton loads of bulk materials, or finished products around crushers, kilns, storage yards. And that's not all —

Lifts 3/4-ton load to 7-foot height

Fork lift attachment lets you use labor saving R-15 Moto-Bug for lifting, stacking, loading, unloading. It lifts 1500 pounds (at 15-in. load center) — has 7-foot lifting height. Hydraulic power raises and lowers load. Mast can be tilted back 10° when carrying load, 2° forward for pick-up or releasing load. Forks are 24 inches long — and adjustable 6 to 32 inches wide. Also check on S-10 Moto-Bug with multiple attachments for smaller jobs. Ask your Kwik-Mix distributor about both sizes, or write to us for Moto-Bug® bulletin.

KWIK-MIX CO., Port Washington, Wis. (Division of Koehring)

Send literature on: ☐ R-15 ☐ S-10 Moto-Bug.

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INDUSTRIAL FANS (Steel Casing) . . . high efficiency for general Air Handling; fume and dust removal; 11 sizes, each with 3 types of wheel for specific applications. Wheel diameters 19″ to 64″; inlet diameters 11″ to 37″.

INDUSTRIAL FANS (Cast Iron Casing) . . . ruggedly built, corrosion resisting. For low volume fume or dust removal, materials conveying, industrial drying and cooling. In 10 sizes, each with 3 types of wheel for specific applications. Wheel diameters 8″ to 34″; inlet diameters 4½″ to 18″.

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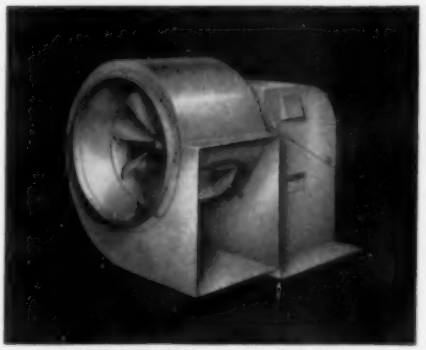
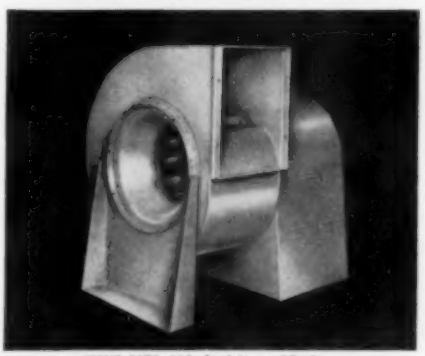
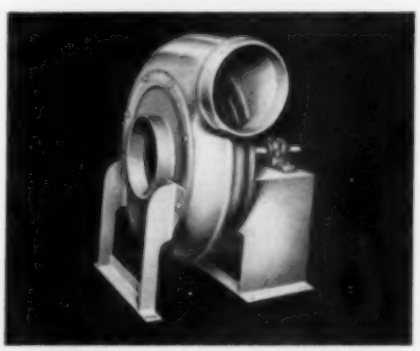


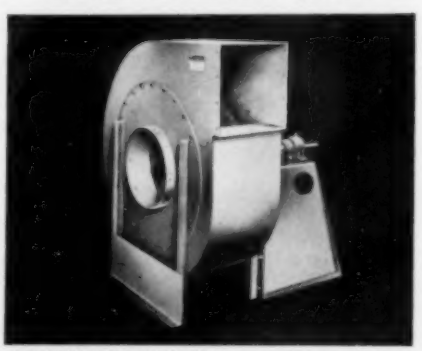
VENT SETS: Direct-connected, 6 sizes



VENT SETS: V-belt driven, 12 sizes



INDUSTRIAL FANS: Cast iron casing, 10 sizes



INDUSTRIAL FANS: High-efficiency steel casing, 11 sizes

How a sand and gravel plant
SAVES UP TO $162 PER WEEK

Amsco® Semi-automatic S/A-53 Tube Rod... used in place of a competitive semi-automatic rod, is saving a large sand and gravel operator up to $162 per week on roll crusher hardfacing. And this is done with no loss of service life... no increase in welding time or rod consumption.

These roll crushers handle 3000 tons of gravel per week, work 10 days between hardfacings. Replacement rolls are hardfaced daily, using about 50 lbs. of rod.

You can make comparable savings by using Amsco S/A-53 Tube Rod in severe impact-abrasion service. S/A-53 is designed especially for use with Amsco MF Semi-automatic Welders, but other machines may be easily adapted to accommodate its $^3/_{32}$" diameter.

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Any Amsco Distributor will give you a chance to try S/A-53 in an Amsco MF Semi-automatic Welder. Why not take him up on it and test the savings yourself?

Write for Bulletin 656, describing S/A-53 and the complete Amsco "wear-fighter" welding line in detail. Address: Amsco Welding Products Department, Chicago Heights, Ill.

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Modern Plant, New Kiln Up Ochs Production

Plant Features: New Interkiln; plans to modernize periodics with insulating brick; periodics loaded by forks; unusual hacking set-up; modernization.

Overall view of the Ochs plant including new tunnel kiln building in back.

Brick are set 17 courses high. Ochs has two setting stations available.

Pug mill is arranged above at right angle to brick machine at Ochs plant.

Beautiful brick in a wide variety are being turned out now by the first tunnel kiln to go into operation at A. C. Ochs Brick & Tile, Springfield, Minn. Total daily average production is running at 125,000.

As far as the operators at Ochs' are concerned, the future good business for the brick industry is assured, especially in their very good market area. Within the past two years the company ownership changed from the Ochs family to Elmer Apt, a capable businessman who has proved himself in other fields and who also realized the growth potential in brick and tile.

Although Apt has spearheaded a vigorous plant modernization program in the short time he has been with the company, he was fortunate in that the original owners had kept the plant quite modern. Even a quick inspection of the plant reveals that most of the major pieces of equipment have been purchased in the last five years or so. Recently a new double tunnel dryer and a 6-brick wide tunnel kiln have been added, giving the company modern machinery and facilities at every step of manufacturing.

Material from Two Sources

Two separate sources of material, one a good red-burning shale and the other a buff-burning clay, enable the company to turn out a wide variety of brick. The buff clay is obtained approximately 30 miles from the plant, along the Minnesota River. This haul is made by two 16½ cu. yd. double compartment dump trucks. A 1 cu. yd shovel serves to dig the buff clay.

Nearly all of the shale is extracted by means of a shale planer using 35′ of its 55′ boom. There are three variations of material in the face of the pit. One part is highly plastic, with another section containing a great deal of silica. The shale planer helps a great deal in mixing the various materials right in the pit.

Three trucks with 8 cu. yd. capacities each haul the shale on the three mile trip from the pit to the plant. These trailers have cut the cost per ton of material hauling to a minimum. Not only that, but the trucks are extremely maneuverable for their size, both in the pit and around the plant.

The raw material is dumped into a 30 cu. yd. hopper which is positioned directly over a feeder supplying one of the hammermills used for all grinding. At the present time, only one hammermill is in operation but soon a second will be installed, Apt reports.

The company has found that the best method of grinding is by using the hammermill for both primary and secondary sizing. Since about 50% fines result from the use of the shale planer, grinding efficiency is relatively low on any machine other than a hammermill.

The unsized material is fed directly into the primary hammermill at a rate to produce some 25 tons per hour, approximately the plant's requirements. The primary hammermill was installed so that most of the fines in the raw material can be sent directly to a pair of 4x8 electrically heated screens. This arrangement has greatly increased the efficiency of grinding. The ground material from the primary hammermill is also fed to the two screens. All oversize material will be conveyed directly to the identical hammermill as the primary for final size reduction. The same size hammermill is used to simplify maintenance and interchangeability of parts.

As the material comes from the secondary hammermill, it does not need screening. This material, plus the sized material from the screens, is gathered on one conveyor belt and delivered to one of two silos, depending on whether the material is red shale or buff clay.

Silos with Feeders

Each of these silos is equipped with automatic vibrating feeders and each is arranged to feed to a single wide belt which ultimately delivers the materials to surge bin and feeder above the first pug mill.

The automatic feeders from the silos are used to blend the red and buff materials to obtain the various intermediate shades wanted. Any combination of blends can be effected with this method.

The surge bin over the first pug mill is 9′ deep with a 4′ square opening at the top. A 36″ wide drag chain type feed belt is used to deliver the material to the blending pug mill. The surge bin above the pug mill is constructed with reverse slanting walls because with straight sidewalls the material might tend to "hand hang up."

Elmer Apt

Ollie Bishop

The pug mill is arranged above and at right angles to the brick machine. The brick machine itself is one of the largest made, developing up to 860 tons pressure on the extruding end. A very complete moisture blending job is done with the double arrangement of pug mill and double auger brick machine. The brick machine is powered with a 175 hp motor, set at 250 amps for control purposes. The motor is mounted on a floating base to ease maintenance and to simplify operation.

Two Hacking Stations

The brick can be hacked at either of two stations, one being the older portion of the plant, using the cube method of dryer car loading subsequently for setting the periodic kilns. Or, brick can be hacked some 40′ beyond the end of the older operation in the new building.

The extended portion of the off-bearing belt runs in a specially built tunnel extending between the two buildings.

The brick also move upward approximately 10′ from the extruding end of the brick machine. Almost every shape made in the brick industry is turned out by Ochs. Very fine structural tile is made in addition to romans, norman and standards, in many color ranges. In addition, the tile can be obtained in any of the finishes available for brick.

The two basic textures used, aside from smooth faces, are a very finely scratched surface and an embossed pattern produced by rolling bundles of sprocket chains along three face sides of the brick. A sand finish is also produced in all the colors and sizes with a sandblast chamber used immediately before the brick are cut.

Hack in Cubes

All production, whether it is set directly onto the kiln cars in the new portion of the plant or dried in the old tunnel dryers, is cubed for handling with fork-equipped lift trucks. After the brick are dried in the older portion of the plant they are set by the same forks into the periodics. The same method is used to unload brick and handle them about the yard.

The hacking line in the new part of the plant is arranged on two different levels because the total height of setting is equivalent to 17 courses of brick. Half the crew operates on one side of the off-bearing belt and the other half on the side which is slightly built-up to enable them to reach the top courses. Two thousand and fifty brick are stacked in four separate cubes on the 6-brick wide setting.

Double Tunnel Dryer

The double tunnel dryer measures 96′ in length and has capacity for 14 cars in each tunnel. Cars are moved through the dryer by hydraulic power, as is the usual practice. The dryer is well equipped with recirculating fans, having three for this purpose alone. Each of the three recirculating fans has a capacity of 12,000 cu. ft. per minute and the exhaust propeller fan has a capacity of 21,500 cu. ft. per minute.

The waste heat fan which brings the hot air from the cooling section of the kiln over to the dryer has a 20,000 cu. ft. per minute capacity. There is no particular difficulty in drying this material, but the dryer has extremely versatile capacity and certainly will never be a bottleneck in the plant. The incoming air is fed in at approximately 420°F., at 0% relative humidity and the entrance end of the dryer is maintained at 120°F., and 70% relative humidity.

28% Carbon in Shale

The tunnel kiln was designed especially for handling material which contains up to 28% carbon. The kiln measures 360′ overall in length and has the following section lengths for each phase of burning: 108′6″ preheat zone; 63′ fire zone; 10′ rapid cool; and 78′6″ cooling zone. The kiln was designed for a 66-minute cycle firing 1800 to 2000 brick per kiln car. The first car in the kiln reaches 480°F.

Just before the brick enter the firing zone, they measure approximately 1900°F. The temperature is raised to 1980°F., in the firing zone, and half of the zone is maintained at a soaking temperature. In the 10′ rapid cooling zone, the temperature is made to drop from 1980°F. to 1610°F. When the brick leave the kiln they measure approximately 500°F.

In order to thoroughly burn the upper parts of the rather high, 17 course load, double sets of burners are used at each station in the firing zone with the upper burner arranged to fire at a 60° angle, with the horizontal. All of the 48 burners on the kiln, 18 in the preheat zone and 30 in the firing zone, are dual fuel burners which operate either on light oil or gas. Shutting down is not necessary to convert from one fuel to another. Two centrifugal pressure blowers supply combustion air to all the burners. One of them has a 500 cu. ft. per minute capacity,

(Continued on page 114)

Equipment List—Och's Brick and Tile

Shovel	**Bucyrus-Erie**
Drag Line	**General 1¼-yd.**
Shale Planer	**Eagle 55**
Front end loader	**Caterpillar D-4**
Tractors	**International, Ford**
Dump Trailers	**Fruehauf 16½ yd.**
Trucks	**Ford**
Hammer mills	**Cedar Rapids 40 x 33**
Feeder	**Pioneer**
Hard facing rods	**Stoody**
Electrically Heated Screens	**Universal 4 x 8**
Pug Mill	**Steele**
Brick Machine	**Fate-Root-Heath WJ**
Cutter	**Chambers**
Motors	**Westinghouse**
Speed Reducers	**Dodge, Falk**
Belting	**U. S. Rubber, Goodyear**
Dryer	**Interkiln-Salgo**
Refractories	**Mexico, B&W, Lumnite**
Tunnel Kiln	**Interkiln-Salgo**
Lubricants	**Lubriplate, Standard, Cities Service, Molubuloy**
Fans and Blowers	**Buffalo, Westinghouse, Eclipse**
Burners	**Eclipse Dual Fuel**
Lift Trucks	**Hyster**
Forks	**Bickerstaff**
Steel Building	**Butler**

"We are well satisfied with our S-D Kiln Car Wheels"

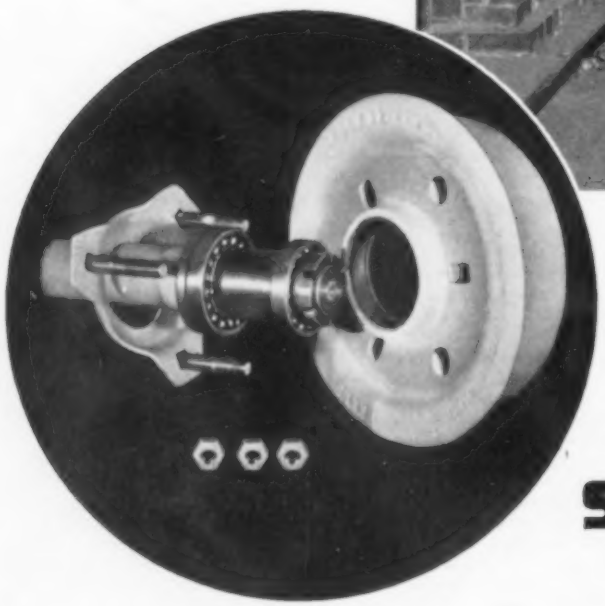
. . . says Plant Engineer Philip D. Pearce, Boren Clay Products Co.

Boren Clay Products has had the S-D "Floater" Wheels in service for over a year at their Pleasant Garden, N. C. plant . . . another of scores of brick plants all over the nation recognizing the smooth running, low maintenance values of S-D "Floater" Kiln Car Wheels.

You, too, can eliminate conventional kiln car wheels and their costly everyday maintenance and lubrication by installing S-D "Floaters" on your present cars.

These S-D "Floaters" run free and easy; seldom require lubrication. Mr. Pearce reports: "We are on a 90-day lubrication cycle and it might be too often but it keeps us on the safe side." The outer hub on S-D "Floater" Wheels is completely closed. Inner hub is protected by two metal grease seals —effectively eliminating dust while retaining special high temperature lubricant.

Let us quote you on wheels for your present cars. Write today. *Sanford-Day Iron Works, Inc., Knoxville, Tenn.*



Mr. Pearce is shown above in his Boren Clay Products kiln with S-D "Floater" Wheel equipped car. S-D "Floater" is shown at left demounted, illustrating how bearings remain in permanent adjustment. Wheels and bearings can be provided for various load requirements.

SANFORD-DAY

Knoxville, Tennessee

Send us photostatic copy or blueprint of your present cars. With this information, we can quote you on replacement wheels. Save maintenance with free and easy running S-D "Floaters"!

Rubber-tired tractor works fast on watery pit floor

A large Ohio quarry, producing 700,000 tons of limestone yearly, uses one rubber-tired Tournatractor to handle all clean-up and pit maintenance. The tractor covers 325 acres . . . maintaining and building haul roads, moving freight cars, pushing in toe of stockpiles, bunching blasted stone, cleaning around shovel.

6" of water, no barrier

A few days before these pictures were taken, heavy rains left as much as 6 inches of water on the quarry floor. Rolling easily on its big 21:00 x 25 low-pressure tires, the tractor maneuvered in and out of the watery loading area, handled its assignments quickly and efficiently.

A major Tournatractor advantage when working in rain and water is that all moving parts in its power train are completely enclosed. They operate in a constant bath of oil, sealed against moisture. Lubricants stay in to prevent corrosion and maintain machine's high-operating efficiency and low-maintenance cost.

"Beats crawler on rock"

Foreman Bernard Boli said, "Tournatractor has crawler beat all to pieces on rock . . . gets around 1¼-mile quarry easily. Our biggest reason for buying the Tournatractor was speed." And operator Charles A. Slover said, "Tournatractor is a wonderful machine for the operator. It doesn't beat you around like a crawler. Besides lubricating quickly, and being able to move six 45-ton-load cars, I like the ease of riding."

Perhaps you can use a 210 hp rubber-tired tractor

To handle widely scattered dozing, pushing, and clean-up assignments, let Tournatractor help you speed operations, save you money. Let us show you owner-verified performance records of Tournatractor on work similar to yours.

▲ Tournatractor moves in between shovel-swings to clean up spillage and doze blasted stone for easier loading. Shovel cycle is not interrupted, because of rubber-tired tractor's sure-footed speed to 17 mph on uneven pit floor.

Tournatractor handles dozing quickly . . . gets good bladeful of rock, moves about 2½ cubic yards in 30-ft. dozing run. Versatile machine handles many other quarry assignments, pushes in blasted stone, cleans up around stockpiles, pulls other equipment around quarry. ▼

Versatile Tournatractor dozes overburden between cleanup and other assignments. Shovel in background removes 6' to 10' of overburden. Tournatractor quickly cleans stone shelf so that production shovels can move in. ▼

Tournatractor—Trademark Reg. U.S. Pat. Off. T-997-Q-bw

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WHERE QUALITY IS A HABIT

Industrial products such as high tension electrical insulators require glazes that must not only be weatherproof but possess a high degree of impermeability.

A Useful Review

Diagnose and Solve

How to Recognize and Control the Compositional and Noncompositional Factors Affecting Ceramic Glazes

By RALSTON RUSSELL, Jr.
Ohio State University
Columbus, Ohio

I. Introduction

Glazes have long intrigued ceramic scientists, engineers and artists. Their beauty, variety and usefulness are undoubtedly partly responsible for this. However, perhaps the very complexity and ofttimes puzzling nature of glazes largely explains their fascination. Anomalous as it may seem, the vicissitudes of glazes, sometimes leading to desirable and sometimes perplexing results, afford strong challenges for creative effort.

Perfection Not Required

In commercial production the principal concern is not glaze perfection, literally speaking, but practical results. This means the continuous production of glazed surfaces which are *defect-controlled* so as to be visually attractive, and yet incorporate other useful qualities such as improvement of ware strength, surface durability, masking power, electrical performance and cleanability.

II. Glaze Compositional Factors

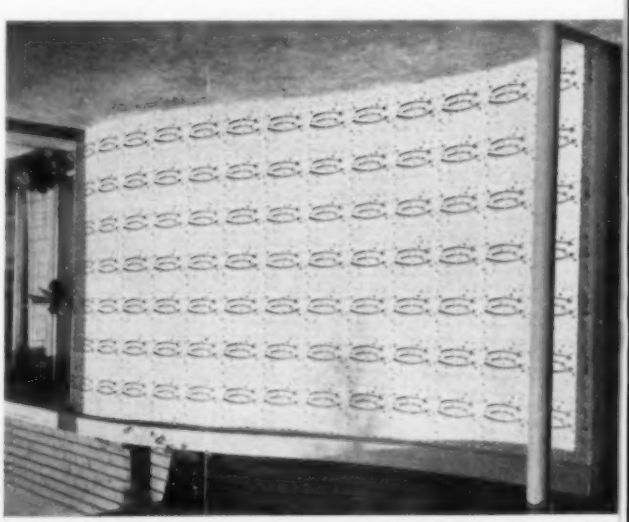
It might be well for all who deal with glaze problems to review the broad meaning of glaze. True, a glaze is a composition. More than that, it is a fired coating produced by processing the composition. Once a composition is selected, the emphasis shifts entirely to processing; to the way it is carried out from weighing the batch to the completion of firing.

It should always be remembered that a fired glaze represents a *composition* and a *manufacturing process*, each being vital to success. With such a philosophy, the atmosphere is favorable for glaze development and the successful production of commercial glazes.

Glazes normally consist of oxides classified as RO (also R_2O), R_2O_3 and RO_2 where R represents various chemical elements or cations and O is oxygen. There are at least nine fairly common oxides constituting the RO group, which is the fluxing and network modifying portion of the glaze composition.

The RO (R_2O) oxides may be alkalies (Na_2O, K_2O, Li_2O), alkaline earths (CaO, MgO, BaO, SrO), lead oxide (PbO), zinc oxide (ZnO) and others. The R_2O_3 is essentially aluminum oxide (Al_2O_3), which has an important stabilizing effect in glaze compositions. The usual RO_2 is silicon dioxide (SiO_2), the glass network former.

Glazes always require a glass network former in substantial amount, as witness the definition of ASTM Committee C-21 that a glaze is "A ceramic coating matured to the glassy state on a fired ceramic article, or the material or mixture from which



Outdoor facades of tile require glazes that must give service under a variety of conditions. They should be carefully inspected for such defects as pinholes.

From an address presented at the annual meeting of the Ohio Ceramic Industries Assn., Columbus, Ohio, October 19, 1956.

Your Glaze Problems

Careful formulation and laboratory control are essential to good glaze performance.

it is made." Other glass network formers used in glazes are boron oxide (B_2O_3), which may also act as a flux, and the compound phosphorus pentoxide (P_2O_5).

Opacifiers and Colorants

In addition to these basic oxides, many glazes will also include opacifiers or colorants. The classic opacifier is tin oxide (SnO_2), with zirconium oxide (ZrO_2) and mineral zircon ($ZrO_2 \cdot SiO_2$) being currently quite popular. Typical coloring oxides include those of iron (Fe_2O_3), cobalt (CoO), manganese (MnO_2), chromium (Cr_2O_3), copper (CuO), nickel (Ni_2O_3), vanadium (V_2O_5), uranium (UO_3), titanium (TiO_2) and others. Some coloring oxides may also act as fluxes, e.g., cobalt, copper and manganese oxides in this group.

The actual chemical makeup of glazes alone is not the entire story, for the same composition may be compounded in more than one way. As an example, it is well known that fritting a portion of the composition will often improve results. The choice of frit composition is somewhat arbitrary and may well be involved in solving a glaze problem.

Choice of Raw Material Important

The actual choice of raw material is also important, be the glaze all-raw or partially fritted. Glazes of identical chemical composition, but compounded from different clays, feldspars or lead compounds, for example, may behave differently. The compositional diagnosis of glazes must therefore direct attention to the batch constitution, as well as its chemical nature.

The true chemical compositions of all batch constituents should always be used in glaze batch calculations. The use of theoretical formulas for ball clays, kaolins, feldspars and talc, for example, can only lead to compositional errors and confusion. However, constituents such as whiting, boric acid and potters flint may for all practical purposes be considered theoretically pure.

When raw material substitutions in kind are to be made in a glaze, this should be done in a manner to avoid any change in actual chemical composition if true comparisons are desired. Even a simple substitution of one clay or feldspar for another will alter the chemical composition of a glaze unless compensating batch calculations are used.

One of the most rigid applications of glazes is on sanitaryware. The glaze surface must be impervious to years of immersion in water and withstand hydraulic use.

III. Noncompositional Factors

As previously noted, the noncompositional factors influencing glazes are too frequently overlooked. These fall into four broad categories:

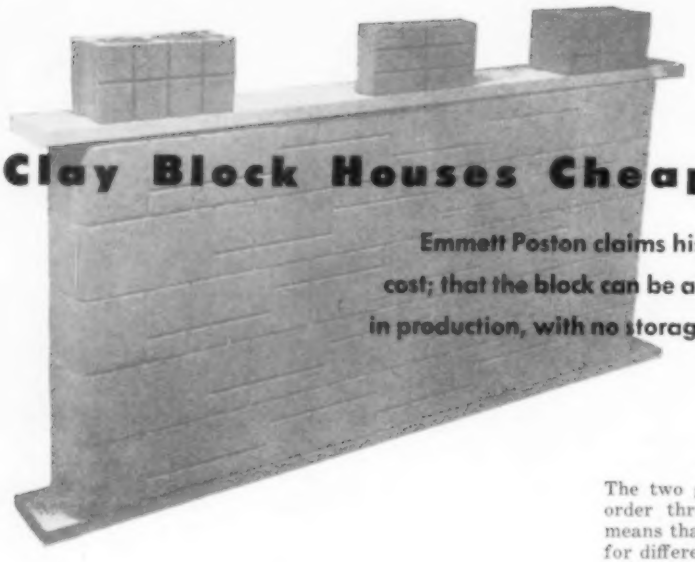
(1) Factors related to the processing, adjustment and handling of the glaze slip.

(2) Factors related to the character of ware and surface on which the glaze is applied.

(3) Factors related to the glaze application.

(4) Factors related to glaze drying and firing.

(Continued on page 111)



Clay Block Houses Cheaper Than Frame?

Emmett Poston claims his new block idea can accomplish that low cost; that the block can be adapted to manufacture with little change in production, with no storage problems; block available in 125 colors

"Acceptance of this block so far has been simply phenomenal. I know it'll go big—the only question I see is how big? It's hard to believe the possibilities of this block."

Those are words spoken by Emmett Poston in explaining his new idea in lightweight clay aggregate block, an idea developed by Poston Brick & Concrete Products Co.

Briefly, the new block comes in many patterns, including coursed ashler, four inch squares, stacked brick, basket weave and others; is available with about 125 colors; can be sold at a cost less than that of frame construction; and requires virtually no change in normal block plant production or equipment.

Stock Size Blocks

From the block manufacturers' point of view, one of the best things about Poston's development is that only minor changes would need to be made in standard operating procedures.

First of all, the block to be used is in standard, modular sizes. Production of the block is identical with manufacture of standard block right up to the storage point. Poston's block is made with a Besser Vibrapac and a more-or-less standard production set-up, with the block trade-named Shalite. The finished block is stored and cured in a storage yard.

Grooving Machine

Now comes the first difference in the production of this block. The basic idea involved is adding false joints to a stock block to form various surface patterns.

These surface grooves are cut into manufactured block by a Poston-made machine that's really a variation on standard masonry saws. In fact, the grooving machine used was assembled with regular masonry saw blades doing the grooving.

In operation, finished block are taken right from the storage area to the grooving machine, with handling speeded up with use of a fork lift truck. Two men operate the grooving machine with the block going through twice to make the vertical and horizontal grooves. After grooving, the block are usually loaded right onto the customer's truck or could be returned to storage.

No Storage, Waste

This set-up creates two of the biggest advantages of this idea in lightweight block. One is that there's no additional storage problem and no need for additional space. The two grooving machine operators can quickly run an order through by taking the block from storage. This means that there doesn't need to be separate storage areas for different patterns.

Another advantage is that there's no waste involved. Only the exact number of block ordered are grooved into the desired pattern. So, storage and waste create no problem in adapting this block to usual production methods.

Later on, when the block has been on the market long enough, Poston plans to stockpile the most-ordered patterns thereby keeping the grooving men busy during slack periods. It would, however, be possible to keep storage only of stock size, ungrooved block.

Block Is Modular

The Poston block is made in the usual 4"-modular sizes. Most block is made in the common 8x8x16" size eliminating need for storing and using various sizes to get different patterns.

Poston believes a big advantage in eliminating various size block is that his unit keeps a running bond for more strength at lower cost.

125 Colors

As we said above, about 125 colors are available because the color is applied after construction has been completed. Poston at present is using a paint called Acrylastic which is applied with a roller. By this method, joints are covered and waterproofed along with the block units.

The paint is available in just about every color known and is very easy to handle. The color comes in tubes and is added to a white base for mixing. Color matching, in event of additional construction or remodeling, would be easy and exact.

Little Groover Maintenance

The grooving saw now used by Poston consists essentially of stock masonry saw parts. Since all the unit does is make the small surface grooves, wear on both machine and blades is minor. Poston is sure that eventually a machine could be built using small 3" diamond blades, saving on both blade wear and cost thusly.

The unit now used was built by the plant but could be put into production by a machinery manufacturer. Poston estimates that a machine similar to his could be built for only about $400.

Fast Delivery

It's easily seen that the grooving operation doesn't take much time . . . it's just a matter of running the block through the machine. One incidental benefit of the Poston plan is that the grooving men can double-check block for quality before it's grooved. When the block comes to the machine, the men check for the best side for grooving, and of course if the block is faulty it's rejected.

Since the block goes directly from the groover to the customer's truck in most cases, there's no problem of the grooved block being chipped or damaged in storage. By

this means, all block that goes to the customer is good block when it's put on his truck.

Cost per block of the grooving operation, depending on sales and production volume, should only be 3¢ a block or less, Poston believes.

Can't See Joints

When looking at the Poston block in a wall, it's just about impossible to tell the real block joints from the false joints. All the joints, real and false, are mortared alike. This means that the false joint pattern is the one noticeable, as opposed to the regular pattern of block.

Many more patterns could be made than those that Poston has suggested. The only thing involved would be to change the setting on the grooving machine. Poston believes that architects may come up with many patterns that are new or unused today.

Wide Acceptance Already

"It's hard to believe the acceptance of this idea by architects and construction men," Poston says, "despite the newness of the block idea." He reports that architects are very interested in use of the block for schools, churches and other construction jobs where budgets are limited. Poston was somewhat surprised by the architects' interest in the block for interior uses and fireplaces. Although the block was originally intended to compete with frame for low-cost housing, many other uses for the block will probably be developed.

Houses To Be Built

Because of the newness of the block and the bad spring weather Springfield has been having, not many construction jobs have used the block so far.

One car wash operation in Springfield used the block (shown in pictures on this page) and great interest was shown by the car wash customers.

Several houses will be built using the block, as soon as weather permits. Six houses to be built by three different contractors will furnish comparative cost figures between Poston block and frame construction. Poston has been assured that the block is not only competitive but can be cheaper than frame construction.

Other Advantages

Some other advantages claimed by Poston are:

The color of the block can be easily matched or changed with a paint job. This overcomes problems caused by redecorating or remodeling. The Acrylastic paint, by the way, is FHA approved.

There should be no problems with construction workers who are already familiar with working with block.

The block manufacturer doesn't need to change his raw material or plant operation to make the block. All he really needs is the grooving machinery.

Some architects feel, Poston says, that there's wider application of the block for interior use than for the planned exterior purpose.

Low cost of the units can mean much greater use of masonry clay products in low-cost housing and other construction. It could mean increased use of clay products and boost the industry generally, Poston believes. It could have the long-term effect of introducing young, low-budget couples to the advantages of clay products early in their housing life.

Facts and Figures

When the block has gone into more construction; when cost figures between the block and frame construction methods are available to back up Poston's belief that block cost will be cheaper than frame; when enough time has passed to gauge public reaction and acceptance, we'll report fully on these developments.

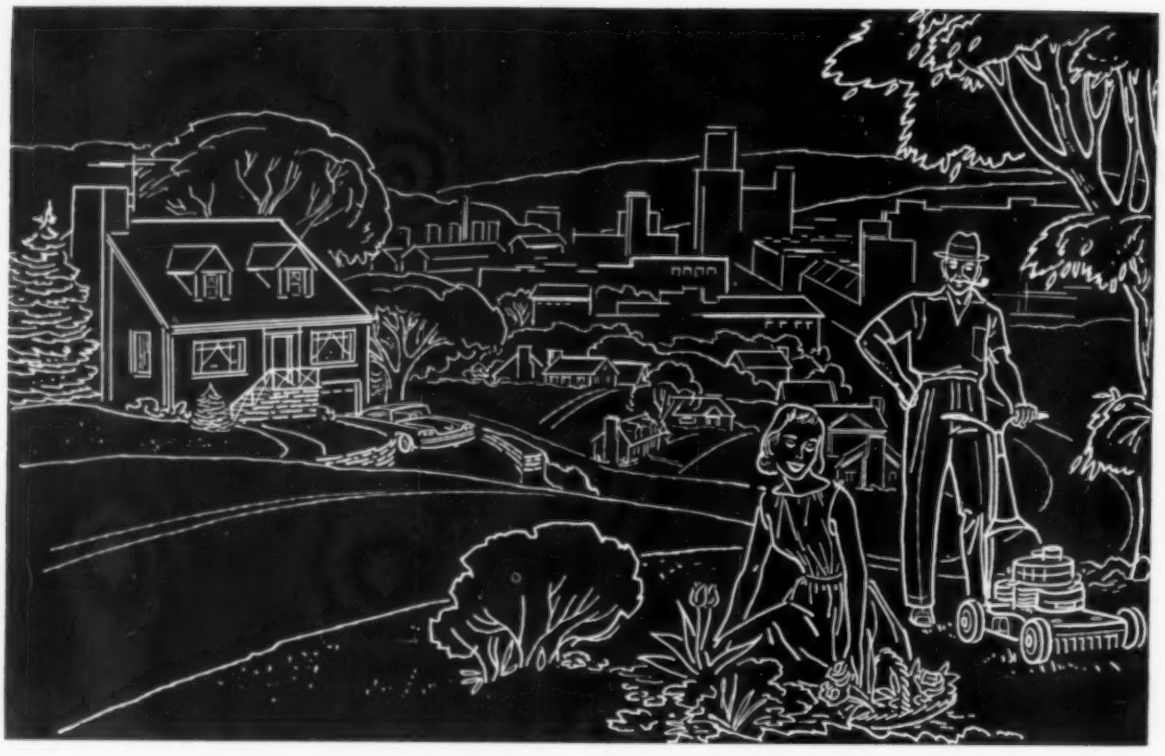
In the meantime, Emmett Poston is completely willing to have this idea studied by other manufacturers; actually, he seems anxious to see this happen. Many manufacturers have expressed great interest in the idea.

Right now, the only problem bothering Emmett Poston is: "Can we make this block fast enough to meet the demand I expect?"

Pictured in these three photos are interior views of a car-wash operation in Springfield, using the new block designed by Emmett Poston of Poston Brick & Concrete.

The pattern used in the car wash was the coursed ashler. Poston has many patterns available including stacked brick, four inch squares, basket weave, double running and others.

Customer reaction has been excellent in this job. Contractors and architects are very interested, Poston reports, with many contractors seeing great potential in the block for interiors.



the billion-mile network of buried faith

Clay Pipe is trusted. It has to be. It's sealed in by streets and sidewalls . . . blocked off by building foundations . . . piled over with earth and rock.

Clay Pipe has a vital job to do, and it must not fail. Yet—nobody worries about the vast underground network of sanitary protection. Few people even think about it. What greater tribute could be paid to a product's dependability?

Clay Pipe goes underground, so it's got to be good. It guards against disease, so it's got to be good. It gets no maintenance, so it's got to be good.

And you can bet your sewerage bonds it *is* good, because it's backed by a written long-term guarantee. Clay Pipe is the only pipe that *never wears out*, and the Clay Pipe industry is mighty proud of it.

THE PUBLIC *KNOWS* CLAY PIPE IS BEST

Vitrified CLAY PIPE

CLAY PIPE NEVER WEARS OUT!

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1820 N. Street, N.W., Washington 6, D.C.

206 Connally Building, Atlanta 3, Georgia
100 N. LaSalle Street, Room 2100, Chicago 2, Ill.
703 Ninth & Hill Building, Los Angeles 15, Cal.
311 High Long Bldg., 5 E. Long St., Columbus 15, O.

PEOPLE
PROGRESS
PRODUCTS

Here are the three P's which make the United States great—170 million *People*, and more to come, *Progressive* enough to invent and distribute the *Products* necessary to insure the American Way of Life.

The Vitrified Clay Pipe Industry fits right in the middle of this greatness —It serves the People with an essential Product which, through research Progress and development does a better job today than ever before,— and vitrified clay pipe has been doing a job for many and many a long year, —centuries, really.

This special edition of the BRICK AND CLAY RECORD gives the industry an opportunity to list those of its members who are banded together in the interest of progress and who are proud to announce their improved products buttressed by new research laboratory facilities, new offerings to the public, and new efficiencies in the science of "Public Health is the Nation's First Line of Defense."

Modern sanitary systems constructed of clay pipe play an everyday role as guardian of the health of the people.

The clay pipe industry is alert to its responsibilities and accepts the challenge of meeting the needs of this growing nation.

D. M. STRICKLAND
President
National Clay Pipe Manufacturers Association, Inc.

National Clay Pipe Manufacturers, Inc.

Progress through Cooperation

D. M. Strickland
President
National Clay Pipe Manufacturers
Association, Inc.

Every industry today, worthy of the name, especially those whose end products serve the public to advantage and elevate our country's high standard of living, finds itself served by a trade association. This is more than true of the Vitrified Clay Pipe Industry. Each area of the country enjoys two types of trade association service: the activities of a Regional Association as well as the program of a national organization.

In pages immediately following, the Regional Organizations will be illustrated. At this point a few descriptive words about the national trade association are apropos, the National Clay Pipe Manufacturers, Incorporated.

Two Reasons For Success

From the day of its inauguration as a serviceable arm for the industry, NCPMI has been a successful operation and has had sturdy support from a majority of vitrified clay pipe manufacturers the country over. There are two fundamental reasons why this is so. Here they are:—

First, the product of the industry is essential to modern day health as fostered and protected through efficient sanitation. Clay Pipe is not a casual product used here and there across the country. It is a universal product used everywhere,

Vice President
G. A. Robinson
National Clay Pipe Manufacturers
Association, Inc.

by the cities and towns regardless of their locations, by rural communities and on the farm, for industrial construction and expansion. The disposal of liquid waste is essential to everybody; clay pipe, therefore, is everybody's product. It is the one inert substance which does this job economically and dependably.

Second, a national trade association is organized for one over all purpose and one only; to forward industry requirements which cannot be better advanced by individual manufacturers or localized groups of manufacturers. NCPMI meets this definition fully and completely. There are nationwide problems facing the industry and NCPMI is available to meet them. These include national advertising; national public relations; service to the Federal Government in the matter of specifications, engineering and construction data and information for the legislative and administrative branches; and industry protection against misunderstandings and unfavorable trends.

To implement the foregoing reasons, i.e., to maintain insistence that vitrified clay pipe is an essential sanitary product and to represent its manufacturers at a national level, NCPMI has headquarters at the nation's capitol and is manned by the officers introduced with this article. The organization itself is controlled by a Board of Directors, two from each of the four geographical locations in the United States. This is an ideal arrangement which brings well rounded views and experiences to all NCPMI discussions and insures a broad program frequently revised and constantly geared to the industry's needs. Thus the adancement of all is enhanced by national cooperation and progress.

NCPMI BOARD OF DIRECTORS

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W. E. Robinson

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W. C. Boren, III

John M. Palmer

Clay Sewer Pipe Association

serving the East

Manufacturers of vitrified clay pipe and related clay products serving the Eastern United States have pioneered important new developments in recent years — thanks to the foresight and support of Clay Sewer Pipe Association, Inc.

CSPA — 16 member manufacturers whose marketing area embraces Connecticut, Delaware, the District of Columbia, Eastern Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Northern Virginia and West Virginia — has sparked new production techniques, new products and new sales methods that have made it possible for the Clay Pipe Industry to improve the usefulness and service of even a product that has proved through centuries it never wears out.

Thanks to CLAY Magazine, for example, member manufacturers make over 150,000 "calls" annually — quarterly visits to upwards of 40,000 professional engineers, architects, public officials, building supply dealers, plumbers and builders and contractors — the prime buying factors who influence specifications, write specifications or actually purchase and install and sell clay pipe and clay products.

Paul R. Rutherford, President, Clay Sewer Pipe Association, Inc.

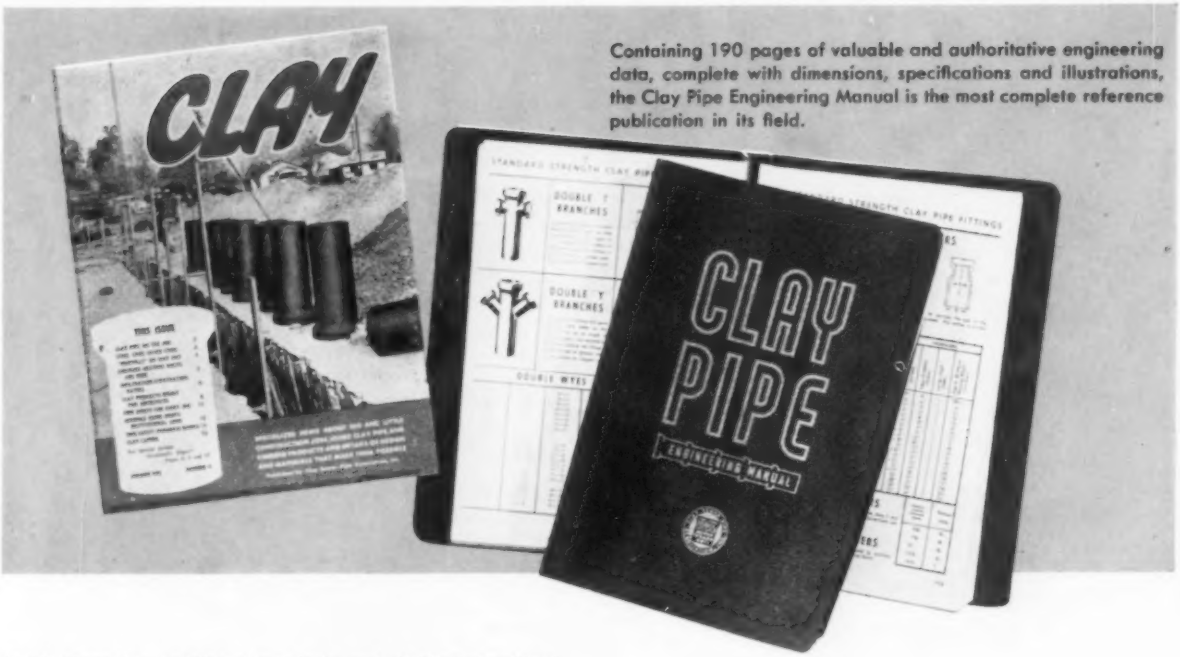
The success of CSPA does not stem from any one source, however. On the contrary, it stems from an overall coordinated program — advertising and publicity, direct mail, field contacts, research and development — each an integral part of the sales efforts of member manufacturers.

Currently in its ninth year, CLAY Magazine, the direct mail medium, is reaching more influential buying factors and growing in acceptance each year. The material it contains is authoritative and has stimulated literally thousands of responses and requests for more information over the years. CLAY Magazine has become identified strongly and closely with CSPA.

And while CLAY Magazine is "calling" quarterly, the competent field staff of CSPA, headed by Sherwood Borland, chief engineer, is making daily personal calls on these buying influences. C. J. Bauer, Jr., Michigan; L. O. Keener, Western Pennsylvania; A. W. Leonardson, New York; John R. Masterson, New England; R. W. Patin, Eastern Ohio and West Virginia; Paul L. Tatham, Ohio and Indiana; Richard W. Snyder, Southern Pennsylvania and New York; J. M. Sprague, New York and New Jersey; and John Meeks, District of Columbia, Delaware, Maryland and Northern Virginia; serve CSPA in the field — even "on-the-job", if necessary — offering guidance and counsel.

That guidance and counsel is collected and made conveniently available in the vast CSPA library, many technical bulletins and the Clay Pipe Engineering Manual, which are offered to those in construction. A Clay Pipe Engineering Manual, a complete source of reference data, heads the CSPA library, but is just one of a wide variety of informative and valuable literature.

Additionally, CSPA supports the Clay Pipe Industry through advertising and publicity, often



Containing 190 pages of valuable and authoritative engineering data, complete with dimensions, specifications and illustrations, the Clay Pipe Engineering Manual is the most complete reference publication in its field.

CLAY Magazine, published quarterly and distributed without charge to upwards of 40,000 influential buyers and specifiers of clay pipe, is typical of the aggressive promotion of CSPA member manufacturers.

working with the National Clay Pipe Manufacturers, Inc., in a coordinated effort to sell the established qualities of clay pipe and to introduce new products and improved practices. Only recently, CSPA took the lead in the Clay Pipe Industry in a newspaper advertising campaign in four key cities — New York, Philadelphia, Cleveland and Pittsburgh — a program designed to test this medium of selling clay pipe to the mass market, as well as to the professionals through building supply dealers, prime source of supply for clay pipe in all markets.

But if there is one factor that stands above all else in the progress of CSPA, it is its research and development program — a program that has developed new products, new installation techniques, new data and information. Foremost is the Association's development of factory made joints.

Advertising and publicity, a direct mail house magazine, a competent field staff, research and development . . . the CSPA practices those for the benefit of its customers first, its members second. Vitrified clay pipe, guaranteed in writing by CSPA member manufacturers for 75 years, is promoted vigorously.

CSPA, with offices at 311 High-Long Building, 5 East Long Street, Columbus 15, Ohio, is headed by Paul R. Rutherford, president. Other key officers include: Merle J. Crites, vice president; Reva D. Smart, secretary-treasurer; Hudson Hillyer, J. V. Duffy, T. J. Evans, III, R. M. Graff, B. A. Holl and W. E. Robinson, members of the board of trustees; B. A. Holl and W. E. Robinson, CSPA representatives on the NCPMI board of directors, with T. J. Evans, III, and E. W. McClave, alternates; R. H. Anderson, CSPA representative to the NCPMI research committee; and J. G. Frantz, chairman, CSPA Advertising Committee, with C. J. Pierce are CSPA representatives to the NCPMI advertising advisory committee.

C. S. P. A.
Member Manufacturers

The Clay City Pipe Co.
Uhrichsville, Ohio

Dennison Sewer Pipe Corp.
Cleveland, Ohio

The Evans Pipe Co.
Uhrichsville, Ohio

Graff-Kittanning Clay Products Co.
Worthington, Pa.

Grand Ledge Clay Products Co.
Grand Ledge, Mich.

Junction City Clay Co.
Cleveland, Ohio

The Robinson Clay Product Co.
Akron, Ohio

The Ross Clay Products Co.
Uhrichsville, Ohio

The Stillwater Clay Products Co.
Cleveland, Ohio

Superior Clay Corp.
Uhrichsville, Ohio

Union Clay Manufacturing Corp.
Binghamton, New York

Kaul Clay Manufacturing Co.
Toronto, Ohio

Kaul Clay Products Co.
Clermont, Pa.

Larson Clay Pipe Co.
Uhrichsville, Ohio

The Logan Clay Products Co.
Logan, Ohio

Peerless Clay Corp.
Toronto, Ohio

What do you mean...
I'm standing on my health insurance?
VITRIFIED CLAY PIPE
You don't have to put a zipper on your lawn
when you install VITRIFIED CLAY PIPE
Vitrified
CLAY
PIPE
CLAY SEWER PIPE ASSOCIATION, INC.
211 High-Long Bldg. Columbus 15, Ohio
5 East Long St.

The Clay Sewer Pipe Association is adding a "plus" to the sales efforts of its dealers through a hard-hitting newspaper advertising campaign, designed to "sell" the established qualities and 75-year written guarantee of vitrified clay pipe and clay products.

The campaign, concentrated in four major newspapers—New York, N. Y., TIMES; Philadelphia, Pa., INQUIRER; Cleveland, Ohio, PLAIN DEALER; and Pittsburgh, Pa., PRESS—features three column by 15-inch ads monthly throughout the Spring and Summer months, those months when construction and the demand for vitrified clay pipe and clay products are at their peak.

The combined circulation of the four newspapers involved is in excess of three million, and the overall program will make well over 15 million impressions among consumers.

Additionally, member manufacturers of Clay Sewer Pipe Association are merchandising each ad to their dealers through monthly letters and reprints. That vigorous merchandising program is contributing the necessary "push" to make the newspaper campaign a success.

The newspaper campaign—an innovation in the Clay Pipe Industry—is another indication of the progressive thinking and foresight and promotional efforts of Clay Sewer Pipe Association and its 16 member manufacturers.

Robert G. Scott, Vice President and General Manager, Clay Products Association

Clay Products Association

serving the Midwest

The Clay Products Association serves a 17 state area in the heart of the nation, extending from Wyoming and Montana on the west to western Indiana and northwestern Michigan on the east.

The Association is made up of 17 leading manufacturers of vitrified clay sewer pipe. Executive offices of the group are located at 100 N. LaSalle Street, Chicago.

The property, funds and affairs of the Clay Products Association are managed by the Board of Directors and its Executive Committee.

Founded nearly 50 years ago, the Clay Products Association has continued to work through the years toward the goals formulated at the time of its organization. Chief among these is an unceasing effort to bring the benefits of properly constructed sanitary sewers to every community in the territory it serves.

Through their Association activities, member companies have done much to promote the growth and advancement of the clay pipe industry. For forty-five years, the Clay Products Association has represented its member firms in the American Society for Testing Materials. Representatives of the Association have played important roles in the development of standards for clay pipe that are universally recognized by the sanitary engineering profession.

In addition to fostering the national research program, nearly every manufacturer has carried on some independent plant research, the results of which are shown in the increased strengths, longer lengths, and factory made joints on the market today.

A major factor in the continuing progress toward attainment of its objectives is the Association's Field Engineering Service, which makes counsel and recommendations on the planning and construction of sanitary sewers available to all who can use it.

For this purpose, the Association maintains a six-man Field Engineering Staff to serve communities, officials and engineers who request technical assistance on any problem involving the use of vitrified clay sewer pipe for sewerage or drainage systems. There is no charge for the services of these experts.

Continued on following page

Clay Products Association Field Engineers travel their assigned territories constantly, bringing their knowledge and experience to any project where it may be needed. Conversant with all phases of sanitation and its important role in community development, they serve as an added source of highly specialized information and experience in the fields of sanitary and civil engineering.

The specific job of the Field Engineering Staff is to provide engineering help in the matter of correct usage of clay pipe. However, staff members are also available to speak before official, civil and fraternal groups, professional and trade organizations, and others concerned with community sanitation. They are prepared to present helpful facts on sewer pipe materials; on the model building and plumbing codes; and to suggest courses of action.

To supplement the work of the Field Staff, the Clay Products Association makes available, to community officials, engineers and interested civic and educational groups, the Clay Pipe News, a 12-page magazine of informative material and in addition publishes educational aids that do an effective job of telling the sanitary sewer and clay pipe story.

Many such materials can be obtained from the Association on request. These include pamphlets and folders, a series of newspaper editorials, motion pictures and two important handbooks on the design and laying of clay pipe.

Among the aids currently offered are the following:

1. **FOLDERS:** PLANNING FOR NEW SEWERS — A step by step outline of procedures to be followed in selecting professional financial and engineering counsel, in financing the project, in voting the bond issue, in awarding of contract, and to complete the construction of the job.

   NEW SEWERS PAY THEIR OWN WAY — How sewers increase public comfort and convenience, improve business opportunities, protect health, raise property values and encourage new construction.

   BEG YOUR PARDON, MA'AM — addressed to women and describing advantages which sewers bring to the family.

   UNTREATED SEWERAGE ENDANGERS US ALL —describes harmful effects of raw sewage discharged into a river or lake, and shows how inexpensively this condition may be remedied.

   SEWER FACTS — explains why vitrified clay sewer pipe is the only ideal pipe material for long and trouble-free use in sewers.

2. **NEWSPAPER EDITORIALS:** A series of editorials on the benefits of sanitary sewers, stressing their comparatively low cost, prepared for use by local newspapers.

3. **MOTION PICTURES:** SEWERS — GUARDIAN OF COMMUNITY HEALTH — the true story of how a mid-west city realized its need for adequate sewerage. This dramatic, 20-minute presentation of the vital role sewers play in community health is told in sound and full color. Its factual case history nature makes it a valuable educational aid for communities throughout Association territory.

   HERE'S HOW — WITH CLAY PIPE — a 20-minute color, sound picture showing the proper methods of laying, bedding and jointing clay pipe. Especially valuable for showings before engineering classes, inspection groups, and others interested in sewer construction.

C. P. A. OFFICERS

T. E. Carey, President, Red Wing Sewer Pipe Corporation, and President, Clay Products Association.

H. P. Wilhelmsen, President, W. S. Dickey Clay Mfg. Co., and Chairman, CPA Executive Committee.

Norman J. Mark, Western Sales Manager, American Vitrified Products Co., and Vice President, Clay Products Association.

T. S. Rawson, President, Iowa Pipe and Tile Company, and Treasurer, Clay Products Association.

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FIELD ENGINEERS

The Field Engineering Staff of the Clay Products Association is constantly on the job to offer technical assistance and information to city officials, engineers, contractors and community groups or anyone faced with a problem involving the use of vitrified clay sewer pipe for sewerage or drainage systems.

Acting in an advisory capacity, this well-trained staff supplements, but does not infringe on, the work of municipal or consulting engineers. By lending their knowledge and experience to all who request it, these men are constantly working to bring the benefits and safety of sanitary sewerage and drainage to all communities within the Association's territory.

CLAY PRODUCTS ASSOCIATION

Member Manufacturers

AMERICAN VITRIFIED PRODUCTS CO.
Chicago 3, Illinois

CANNELTON SEWER PIPE COMPANY
Cannelton, Indiana

THE CLAY CITY PIPE COMPANY
Uhrichsville, Ohio—Rockville, Indiana

THE DENVER BRICK AND PIPE COMPANY
Denver 1, Colorado

W. S. DICKEY CLAY MFG. COMPANY
Kansas City 42, Missouri
Texarkana, Texas-Arkansas
San Antonio, Texas

IOWA PIPE AND TILE COMPANY
Des Moines, Iowa

LACLEDE CHRISTY COMPANY
St. Louis 10, Missouri
White Hall, Illinois

LEHIGH SEWER PIPE AND TILE COMPANY
Fort Dodge, Iowa

THE LOVELL CLAY PRODUCTS COMPANY
Lovell, Wyoming

NATCO CORPORATION
Brazil, Indiana

OWENSBORO SEWER PIPE COMPANY
Owensboro, Kentucky

RED WING SEWER PIPE CORPORATION
Red Wing, Minnesota

THE ROBINSON CLAY PRODUCT COMPANY
Akron 9, Ohio

THE STANDARD FIRE BRICK COMPANY
Pueblo, Colorado

STREATOR DRAIN TILE COMPANY
Streator, Illinois

TEXAS VITRIFIED PIPE COMPANY
Mineral Wells, Texas

WHAT CHEER CLAY PRODUCTS COMPANY
What Cheer, Iowa

THE SALT GLAZED PIPE MFGRS. ASSOC., LTD.
Associate Member
Johannesburg, South Africa

Sanitary Engineering Service

serving the South

Wendell D. Anderson is President and Chief Engineer of Sanitary Engineering Service, Inc. He holds a Bachelor of Engineering from University of Iowa and is a registered engineer in States of Georgia and Iowa. He is a member of American Society of Civil Engineering, Georgia Engineering Society, National Society of Professional Engineers, National Society of Military Engineers, Georgia and Federation of Sewage and Industrial Wastes Assoc.

Sanitary Engineering Service, Inc., was formed in 1952 to provide sanitary engineering service for the leading clay pipe manufacturers in the ten (10) Southeastern States and their customers.

Our District Engineers working with municipal engineers, consulting engineers, architects, government agencies and private industry "cover Dixie like the dew". In 1957 we expect to expand our service by adding one or more engineers in the field. Our Chief Engineer, Wendell D. Anderson, has a residence in Atlanta and travels throughout the area extensively directing all phases and operation of the service. Mrs. Merle Walker is Secretary and Office Manager of the Corporation.

Each client of SESI has improved his product and increased production. In 1956 production measured in tons was about 2½ times pre-war sales. The fourth new tunnel kiln started production of longer lengths of stronger pipe in 1956. New, jumbo-sized, periodic kilns for increasing production of larger pipe is another common sight at the Southeastern factories. The Clay Pipe Industry in Dixie is advancing with the industrial growth of the South.

Mrs. Merle Walker is Secretary and Office Manager of Sanitary Engineering Service,

Inc. She was a chemistry major from Agnes Scott College, Decatur, Ga. and holds a B.S. in Social Science University of Georgia.

William (Bill) E. LaGrone is a product of Clemson College, Clemson, South Carolina.

Before coming with Sanitary Engineering Service, Inc., he was with U.S. Post Engineers and U.S. Public Health Service. He is Southeastern District staff member.

Don Wilmoth, Civil Engineer, graduate of University of West Virginia—B.S. in Civil

Engineer. He is Northwestern District staff member.

Thomas (Tom) S. Bogess, Jr. is a graduate of Louisiana State University in 1934 with B.S. Pure and Applied Science. He also holds a M.S. from Louisiana State University Medical School, 1936, in Biochemistry. He is Southwestern District staff member of SESI.

Paul Kenneth Wood serves SESI Northeast of Atlanta. He is a graduate of North Carolina State College in Civil Engineering.

Southern Manufacturers

CANNELTON SEWER PIPE CO.

OCONEE CLAY PRODUCTS

W. S. DICKEY CLAY MFG. CO.

OWENSBORO SEWER PIPE CO.

LEE CLAY PRODUCTS CO.

PINE HALL BRICK AND PIPE CO.

POMONA TERRA-COTTA COMPANY

CANNELTON SEWER PIPE CO.
Mineral Wells, Texas

Cannelton Sewer Pipe Company
Cannelton, Indiana
Edward F. Clemens, President

LEE CLAY PRODUCTS CO.
Clearfield, Ky.

John M. Palmer
Sales Manager

Thos. L. Howard
Manager
Birmingham, Ala.

Lee Campbell
Manager
Meridian, Miss.

Joe Mason
Vice President
Kansas City, Mo.

A. G. Brading
Manager
Chattanooga,
Tenn.

W. S. DICKEY CLAY MFG. COMPANY
Southern Branch Offices
Chattanooga, Tenn.
Birmingham, Ala.
Meridian, Miss.

R. O. Newton
Sales Manager
Chattanooga,
Tenn.

OCONEE CLAY PRODUCTS
COMPANY

Milledgeville, Ga.
T. McComb Hines
President

OWENSBORO
SEWER PIPE CO.
Owensboro, Ky.
Wilbur F. Grascurth
President

PINE HALL BRICK
AND PIPE CO.
Winston-Salem, North Carolina

F. F. Steele, Jr.
President

POMONA TERRA COTTA CO.
Greensboro, North Carolina

W. C. Boren, III
President

Clay Pipe Institute

serving the West

Joseph A. Donovan, Secretary-Manager, Clay Pipe Institute, Los Angeles, Calif.

The Clay Pipe Institute was organized in Los Angeles under the original name of the Pacific Coast Clay Products Institute in April, 1943. That original name was changed to the Clay Pipe Institute in June, 1954. Like so many trade associations the Clay Pipe Institute is a non-profit organization formed for the purpose of pursuing the common interests of the West Coast Clay Sewer pipe manufacturers more efficiently and economically than it would be possible by individual companies. It promotes and protects the interests of the industry through a broad program of service to the specifiers and users of its products as well as to its own membership.

It has been said that "the purpose and aim of the trade association is to deal with all questions of general application in the branch of industry or commerce which it serves, and so develop its field that the enterprises in it may be conducted with the greatest efficiency and economy." This is probably as sound a program as can be proposed. Such a program is designed to accomplish the following:

1. To provide representation with technical groups, government agencies, and users of our products.
2. To foster and develop good will and a better understanding of our goods and services.
3. To act as a center of information about the industry to the user acquainting him with our products and their use.
4. To be the provider of current useful informa-

Continued on following page

tion to the members through memoranda, reports, etc.

5. To extend the functions necessary with joint product promotion such as cooperative advertising, publicity through booklets and other material, exhibits and demonstrations, and engineering service.

One of the most important of the latter functions is the engineering service extended by the institute. Three district engineers located at key points in the Pacific Coastal States act as the vital link between the producers of clay sewer pipe and the users thereof. Working as a team they hold positions as valuable and many times necessary advisers to the specifying and using public by offering their expert knowledge of how our products and services may be used. They are constantly available to discuss, suggest and advise concerning the pipe product as well as the advantages that the product can produce. The District Engineers and their respective territories are as follows:

Orville L. Dickinson of Glendale, California, who covers all of Southern California, Western Arizona and portions of Nevada.

William N. Kemp, of Concord, California, who covers Northern California, Southern Oregon and parts of Western Nevada.

Owen B. Williams, Jr. of Seattle, Washington, who travels Northern Oregon, all of Washington and parts of British Columbia.

Continuing residential and industrial development of the West will pose many problems for the Coastal area chief among which will be adequate sewerage facilities. The six members of the Clay Pipe Institute together with one Canadian affiliate are dedicated to contribute their efforts to the establishment of such adequate facilities.

Current officers of the Clay Pipe Institute are:
President—George McClyman of the Atlas Sewer Pipe Company
First Vice President—W. C. Reordon of The Los Angeles Brick and Clay Products
Second Vice President—A. C. Gladding of Gladding Bros. Mfg. Co.

Current Directors of NCPMI are—Mr. Ray Conover of Gladding McBean and Company and Mr. E. M. Lawrence of Pacific Clay Products with John C. Fredericks of Pacific Clay Products and Mr. George Mays of California Pottery Company as their alternates.

Members of the Clay Pipe Institute take pride in the fact that our segment of the industry paces the field in the development of the longer lengths as well as the larger diameters of vitrified clay pipe and are continuing to expand production of the popular and serviceable mechanical compression type joints. Other products produced by members of the Institute include clay flue lining and clay liner plates for the protection of surfaces otherwise susceptible to corrosion or disintegration.

Member Manufacturers

The Atlas Sewer Pipe Company
Whittier, California

California Pottery Company
Niles, California

The Clayburn Company, Ltd.
Vancouver, British Columbia

Gladding Bros. Manufacturing Company
San Jose, California

The Gladding, McBean Company
Los Angeles, San Francisco and Seattle

Los Angeles Brick and Clay Products Co.
Los Angeles, California

Pacific Clay Products Company
Los Angeles and Stockton

District Engineers

Orville L. Dickinson

William N. Kemp

Owen B. Williams, Jr.

Clay Pipe Institute Officers

President
George McClyman
Secretary-Treasurer
Atlas Sewer Pipe Co.

Second Vice-President
A. C. Gladding
Gladding Bros. Mfg. Co.

Secretary-Manager — Joseph A. Donovan is shown on the opening page. A photograph of *First Vice President*, W. C. Reordon, Los Angeles Brick and Clay Products, was not available.

Clay Pipe Institute Directors of NCPMI

Ray Conover
Vice President, Pipe Products
Div. Gladding, McBean & Co.

E. M. Lawrence
Vice-President, Sales
Pacific Clay Products

Alternate Directors

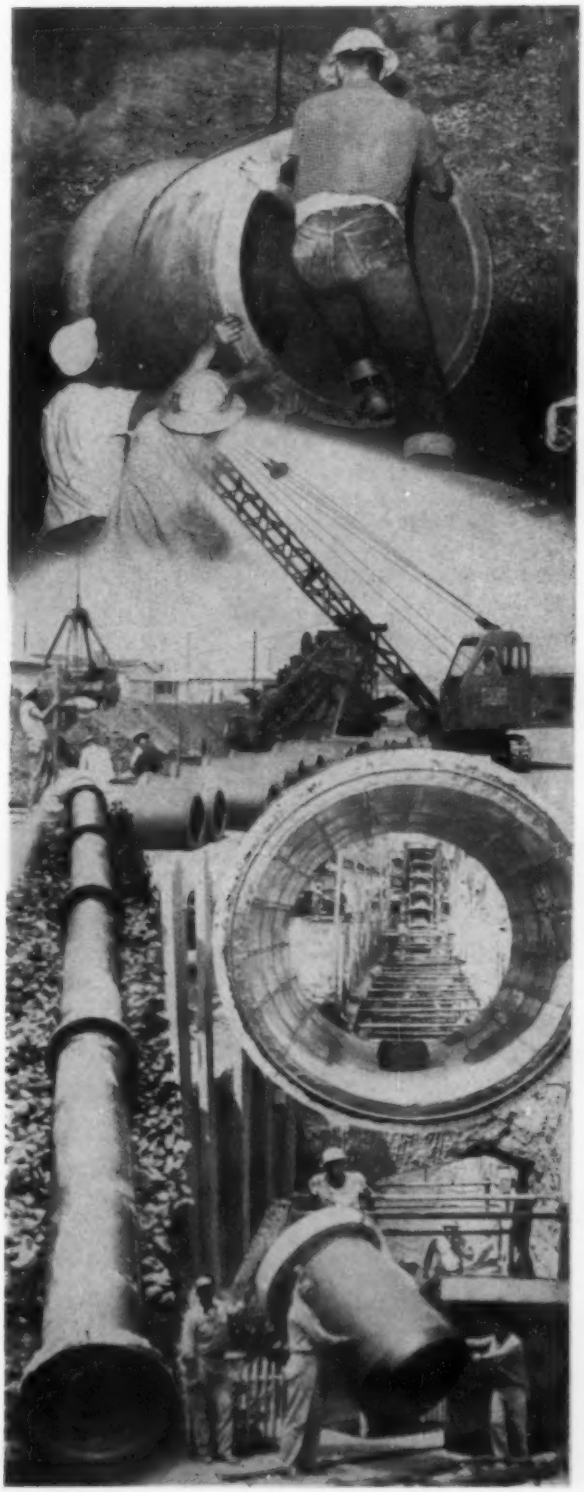
George A. Mays
General Manager
California Pottery Co.

John C. Fredericks
President and Gen. Manager
Pacific Clay Products

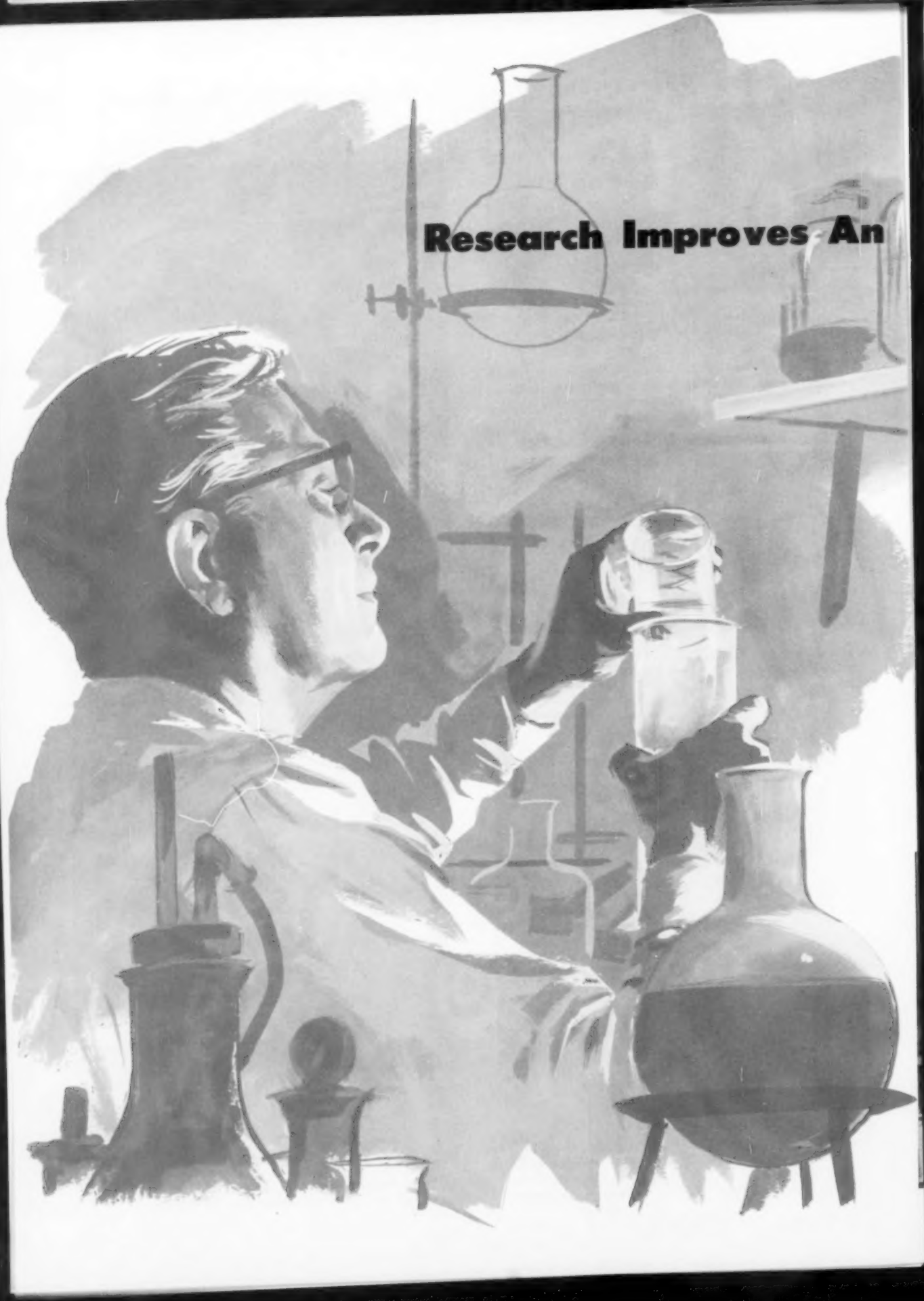
C. W. Planje
President
Gladding, McBean & Co.

R. M. Hungerford
Vice President
Clayburn Co. Ltd.

Progress In The West



The West continues to grow. Growing with the area of the country are the plants of member manufacturers.


Research Improves An

Age-old Product

A. J. Reed
Research Director
NCPMI

We often hear the expression "There's nothing new under the sun". But, like most old sayings, this one is not literally true. However, it would be true to say that there is very little new under the sun.

Anyone who has worked in the field of research knows that new developments are actually new applications of old knowledge. This is sometimes disconcerting to the research engineer because we all like to feel that we have done something that has never been done before and that we have pushed the frontiers of scientific knowledge forward by a micron or two. In the majority of cases today, however, new developments are the result of applying old knowledge in different combinations, under different controlled conditions, and eventually arriving at a different result.

Research work today is entirely different from the fictional concept of white-frocked scientists rushing about a room full of complex apparatus and daily making earthshaking discoveries. Rather, successful research is the result of painstaking and routine work, coupled with keen analysis and observation.

In our research work on vitrified clay pipe we can truthfully say that there is "Nothing new under the sun" from a raw material standpoint . . . Mother Nature formed the clays in the earth over thousands of years. These are mined, formed into pipe, fired, and returned to the earth as the best sanitary piping material ever known. Regardless of how competent we might be as research workers, we know that we cannot improve upon nature's research program which has been in progress much longer than ours.

There has been much research done in the past few years on non-clay sanitary piping materials. We know that the major research problem confronting producers of these materials is the problem of durability and life in service. In our research program, we are fortunate in not having to worry about the durability and life in service of vitrified clay pipe. Mother Nature has been working on this problem for us over the centuries and her success is evidenced by the fact that clay pipe has been unearthed in perfect condition after hundreds of years of service.

Our work is directed toward the 'end use' of the product, — that is, longer lengths with greater strength and with improved jointing techniques for the "sewer line in place". In working toward these objectives, we recognize that a higher level of performance will continually be required, as it is with every other product. Therefore, the techniques with which we are working today may not be used for, perhaps, five or ten years hence. A technique or process that is superior today may be only "good enough" in five years. We feel that being "good enough" is not a proper or wise goal for which to strive. The Model T was good enough in 1925, but it could never compete in the market today.

New Lab Major Step

The building of the new NCPMI research laboratory in Crystal Lake, Illinois, is a step of major importance in the research future of the vitrified clay pipe industry. For the past two years, we have been working on the development of new jointing materials. This work has progressed to the point where we are now ready to utilize these materials in the jointing of clay pipe on a pilot plant scale. This will be one of the first projects to be undertaken in the new laboratory.

Also, our future work on the development of new jointing materials will be done in the industry laboratory, thus bringing the basic research on materials and the application of those materials under centralized control. This work, together with our other projects relating to root action studies, improved strength and testing procedures, will result in a closely coordinated and efficient research program directed toward continued advancements of sanitary piping materials.

New Laboratory speeds research development

Modern, fully equipped facilities will allow for great strides in research work. Centrally-located laboratory will mean more research, greater progress.

The recently expanded research program of the National Clay Pipe Manufacturers, Inc. will be supplemented this year by the construction of an industry research laboratory. In addition to the research facilities, the new building will serve as the centralized office for the clay pipe industry research program.

The new laboratory will be located in Crystal Lake, Illinois, which is 43 miles northwest of Chicago. Five acres of land were acquired recently on Route 176 near the city limits of Crystal Lake. The street address of the laboratory, appropriately, will be Terra Cotta Avenue.

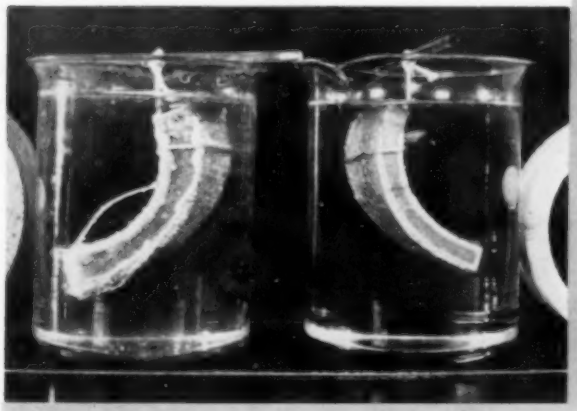
For several years, the industry research laboratory has been located in Los Angeles, California. In addition to work done in this laboratory, other projects have been assigned to industrial research organizations and universities throughout the country. The construction of the new labora-

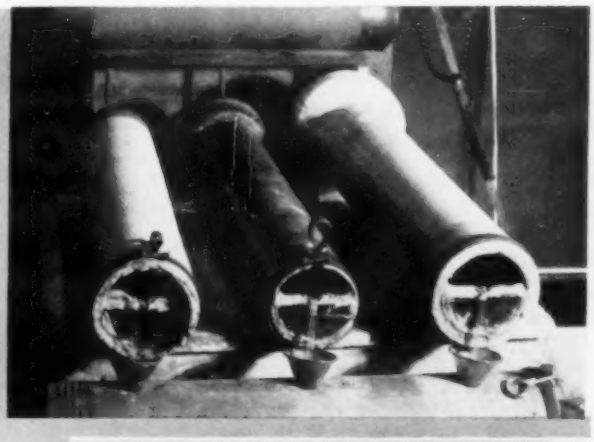
tory will serve to centralize the research effort of the industry so that work on related problems can be concentrated in one location.

The new building was designed by Architects George Fred Keck and William Keck of Chicago. Architecturally, the structure will be a striking example of contemporary design. It will incorporate the maximum use of clay products in both interior and exterior. A unique design feature is the maximum utilization of natural light, by means of the latest design of skydomes.

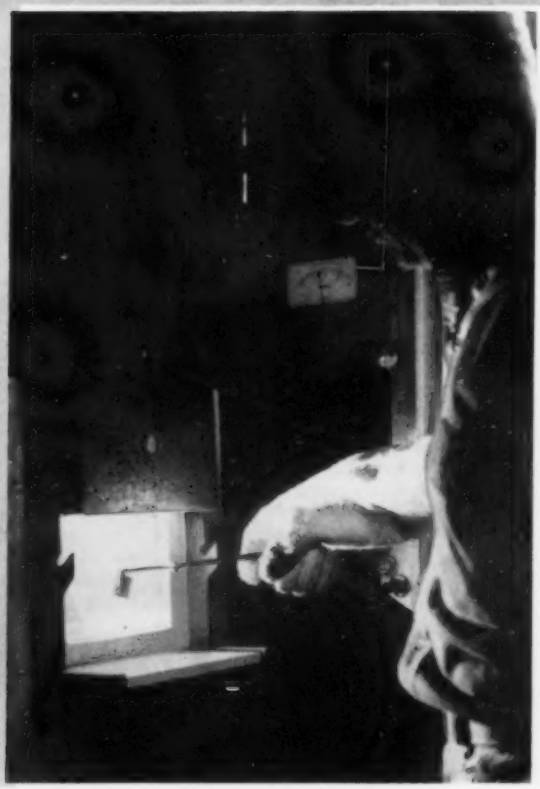
This technique of natural overhead lighting offers the further advantage of providing large, unbroken brick walls in the laboratory area, which will permit efficient utilization of space for research and test work. The office area will be covered by a mezzanine floor which will house small unit laboratories and will also permit future expansion of office facilities if required.

The building plans are completed and construction is expected to begin in the late Spring with completion scheduled for this Fall.





Typical clay pipe research scenes. The research projects now underway—those to be conducted in NCPMI's new laboratory will be important contributions, not only to the technical advance of the clay pipe industry, but to the health and welfare of the nation.



Government Relations

for the clay pipe industry

G. A. Robinson, Vice President, National Clay Pipe Manufacturers, Incorporated.

Today, perhaps more than at any time in the history of this country, there is greater need for organized business to rally to the aid and protection of a system which has made possible the success of our commercial organizations, from the smallest to the biggest — the system which made it possible for this country to become the richest and greatest industrial nation in the world — the American Free Enterprise System.

Organized business must be eternally alert to the encroachment of centralized government, creeping socialism, and all other threats to our free enterprise system. It must be prepared and ready to engage in protective or corrective action.

New Relationship Forming

There is today a perceptible and significant growth in the development of a kind of relationship between trade associations and government which is creating mutual cooperation and respect.

The Honorable Homer E. Capehart of Indiana, in the Senate of the United States, said:—

> "It long has been my contention that businessmen generally should take a more active part in the affairs of Government; both in wartime and in **peacetime.**"

For many years there has existed in Government an anti-business attitude. Business has been the guinea pig for many new Government theories and doctrines. Much of the blame for this can be laid to the size of the Government, — to the social planners and the theory-loving type of Government economists. However, some of the blame can be placed on business. For years businessmen have felt that they were the Government's whipping boys. They felt that they were without a friend in Court. They were reluctant to give testimony before Congressional Committees. They feared reprisals. This, in part, explains the inclination of many businessmen to criticize Government and their unwillingness to participate in Government.

During World War II, many businessmen served the Government as members of Industry Advisory Committees. These committees were forced by the Government to assist and advise key personnel in Governent departments. Unfortunately, they also had the effect of circumventing the trade association. These Industry Advisory Committees provided an outstanding service to Government and should be continued, but their function should also include further Government cooperation with Trade associations.

Our Government is a Trust. It exists in the form we have chosen, as expressed through legislation by our representatives and by the results of the ballot box. The officers of Government are Trustees. Like the officers of business, entrusted with the successful operation of their organization, most Government executives need, solicit and welcome information such as the well-informed trade association can furnish.

Government relations today require much more attention that heretofore. They are more delicate and among the most important functions of a modern trade association.

Maintaining friendly relations with the Government does not, in any way, deprive the trade association of its right or its freedom to criticize or oppose the Government. In fact, friendly criticism sometimes accomplishes more than the "chip-on-the-shoulder" attitude.

Government is People

Government is not omniscient. Government, like business, is people working together. In the event of serious disputes involving actions by the Government, which the trade association may regard as harmful or inimical to the best interests of its members, there is no reason why the trade association cannot be effective in every way.

It frequently happens that Government attitude improves, or completely changes, when presented with a well prepared and well presented draft of all the factual data involved.

With Government playing a role in all business, from the manufacture of tooth brushes to the refining of tung oil, Government action occasionally affects the production, distribution and sales of clay sewer pipe. That is where National Clay Pipe Manufacturers, Inc., comes into the picture

to serve the best interests of its members. National Clay Pipe Manufacturers, Inc., is interested in any one in Government who purchases clay pipe, or influences the production, distribution, sale and installation of clay sewer pipe or any other kind of sewer pipe.

During the years 1955 and 1956, National Clay Pipe Manufacturers, Inc., had transactions with almost sixty per cent of the departments and agencies of the Government, from the Interior Department's Bureau of Mines to the Treasury Department's Bureau of Internal Revenue. These transactions covered nearly everything from information on the type of clay being used to the amount of tax to be paid. These two years from National Clay Pipe Manufacturers, Inc., improving its Government relations with mutually beneficial results and, for this reason, the year 1957 finds National Clay Pipe Manufacturers, Inc., taking an even more active interest in Government affairs.

NCPMI Supplies Information

Government departments and agencies, working for the general welfare of the people, must, of necessity, have the latest technical data and information. Consequently, National Clay Pipe Manufacturers, Inc., through its Research, Specification and Technical Committees, is cooperating with many of the Government departments and agencies in formulating Commercial Standards, Federal Specifications, and the revision of existing specifications. This includes agencies such as the Department of Defense; Federal Housing Administration; General Services Administration, Public Health Service of the Department of Health, Education and Welfare; Department of Labor, National Bureau of Standards; Business and Defense Services Administration; Commodity Standards; and other divisions of the U. S. Department of Commerce; the Joint Committees of the Department of Labor and the Department of Commerce on Essential Industries and Critical Occupations.

On tax matters, National Clay Pipe Manufacturers, Inc., consults with members of the Ways and Means Committee of the House of Representatives, the Internal Revenue Service, the Bureau of Mines of the Department of the Interior, and the U. S. Treasury Department.

Represents All Districts

National Clay Pipe Manufacturers, Inc.'s "Government Relations" are not confined to Government departments and agencies, but also extend to members on both sides of the political aisle in both House of Congress. There are some fifty Congressmen representing districts in which clay pipe manufacturing plants are located. National Clay Pipe Manufacturers, Inc., feels that, in addition to regular contacts by the association, these members of Congress should also know the clay pipe manufacturers in their districts and understand their problems. As a result, National Clay Pipe Manufacturers, Inc., now sponsors an annual Congressional Dinner, following National Clay Pipe Manufacturers, Inc.'s, annual meeting in Washington, where these members of Congress and the association members may sit down together, become better acquainted over the dinner table, and discuss matters of mutual interest.

Through Government relations such as these both Senators and Congressmen are learning the importance of the clay pipe industry and its contribution to the health and welfare of the nation through the use of everlasting clay pipe in modern sanitary sewage systems.

Government relations, such as those described above, have helped to influence the decisions and actions of Government officials, such as the action taken last February by Commerce Department Secretary, Sinclair Weeks, making trade association executives eligible to serve, by invitation, on appropriate Industry Advisory Committees of the Commerce Department.

Clay Pipe manufacturers, cooperating effectively with the Government through National Clay Pipe Manufacturers, Inc., are being represented at the policy level in Washington. This cooperation has made National Clay Pipe Manufacturers, Inc.'s, Government relations the best in the history of the Vitrified Clay Sewer Pipe Industry.

ARTHUR M. MILLER — Mr. Miller has been appointed Assistant Office Manager for the National Clay Pipe Manufacturers, Inc., Washington Headquarters, 1820 N Street, N.W., Washington.

Mr. Miller is formerly from McPherson, Kansas, and was associated with Consumers Cooperative Association, an affiliate of National Cooperative Refinery Association. He moved to Washington in February 1953 where he has been associated with the Department of the Army, Inspector General's Office as Assistant Chief, Administrative Division and with U.S.A.C. Transport as Chief, Billing Department.

Mr. Miller is a member of the Washington Metropolitan Chapter of The American Society of Sanitary Engineering and is Chairman of the Chapter's Publications Committee.

CHARLES E. PERRY—At their Fall Meeting at Pebble Beach, California, the Board of Directors of the National Clay Pipe Manufacturers, Inc., named Mr. Charles E. Perry, Manager of the Association's Government Relations Department, assistant to Vice President, G. A. Robinson.

Mr. Perry is a native of Washington, D. C. and was associated with the Southern Railway Company for the past sixteen years as Chief of Staff for Southern's Chief Surgeon. He also served as Secretary-Treasurer for the Association of Surgeons of the Southern Railway System.

Mr. Perry is a member of the Metropolitan-Washington Chapter of The American Society of Sanitary Engineering and Chairman of the Chapter's Program Committee. He also is a member of Washington Trade Association Executives.

14 Years of Advertising

Keep Clay Pipe A Strong Competitor

Ads follow newest advertising trends, achieve high readership scores among clay pipe's customers; case-history approach gives valuable information.

During the past 14 years, the National Clay Pipe Manufacturers, Inc., has conducted one of the most remarkably resultful advertising programs ever planned and carried out by an association of manufacturers.

All through that period, stalked by world conflict, uncertain supply of materials, and aggressive promotion of scores of new competitive products, the clay pipe industry stuck to its successful, long-term pattern of advertising—a campaign designed to build the industry over a long period, rather than seek a handful of immediate orders. Year after year, the industry continued to tell its story of a quality product, performing a needed service. And year after year, more clay pipe has gone into public, private, and industrial service. Production has risen far faster than population growth, and is

Copy in the NCPMI 1957 advertisements will continue to follow the case-history pattern in the large-diameter pipe ads that has proved so outstandingly successful in previous campaigns, scoring highest ratings for the ads in their respective publications.

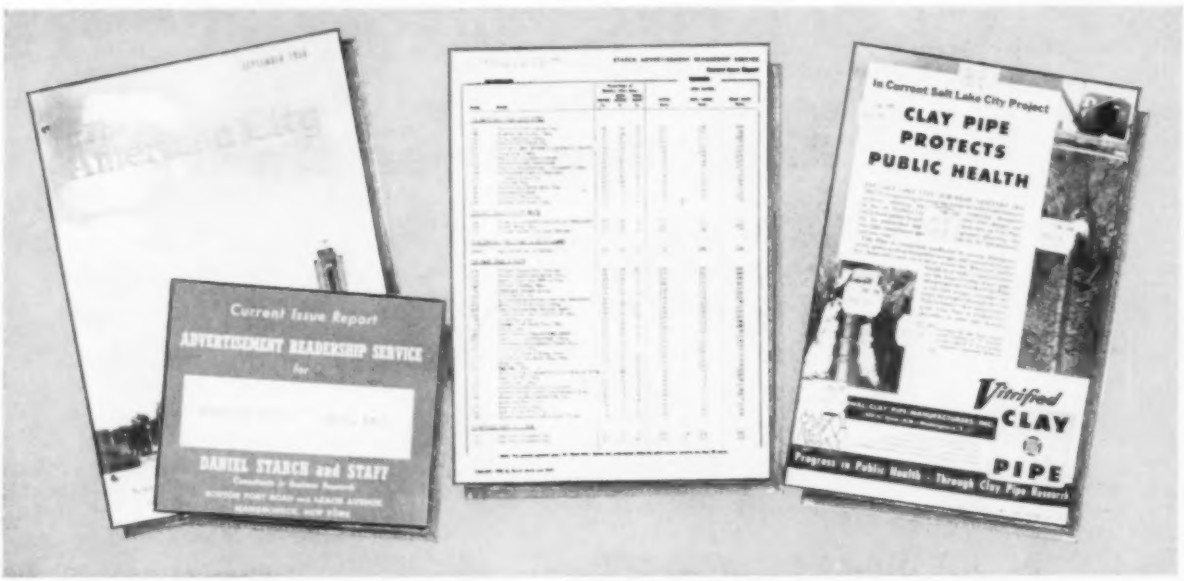
now at record levels. And perhaps even more important, clay pipe has maintained its competitive dominance in the sewerage field, despite all the new substitute materials which have fought so aggressively for the market.

NCPMI's advertising delivers a double punch:

With one series of trade ads, it establishes the growing use of clay pipe for large-diameter pipe projects, through the case-history type of message aimed at consulting and sanitary engineers, public officials, and contractors.

outnumber the "thorough readers." The remaining elements—dominant product-in-use illustration, slogan, and "billboard signature"—follow through to give the ads continuity, distinctiveness, and the family resemblance that builds instant recognition and above-average readership.

Proof of the success of this formula is that NCPMI ads are being seen, noted, and read—consistently registering top-bracket scores in Starch readership studies. The 1957 advertising campaign calls for the continuation of this success-



NCPMI advertising consistently outshines that of all other pipe producers, and most other advertisers, in attention and readership. The NCPMI Clay Pipe advertisement published in AMERICAN CITY, September, 1956, reached one of the three highest ratings for full page, black-and-white ads.

With another series, it seeks out smaller diameter pipe users and specifiers—architects, builders, plumbers, dealers—emphasizing clay pipe's many benefits and frequently quoting the user's own testimony. The accumulative effect of this formula has maintained vitrified clay as the preferred pipe material in all markets.

The format of NCPMI's advertising is all muscle. The "billboard headline," pioneered by the association's 14-year agency, Norman Malone Associates, Inc., of Akron, has been responsible for much of NCPMI's advertising success. Its formula is simple: state the significant message in a crisp, readable headline, so that an impression is registered whether or not the reader has time to review the copy. This Formula was originated especially for trade magazines, where the "quick scanners"

ful pattern, with stronger emphasis on its most outstanding elements.

Additionally, the 1957 campaign calls for a new slogan. Recent NCPMI surveys confirmed again Clay Pipe's number one preference—not only with the professionals who use it, but with the public whom it serves. In the past few years, the public has demonstrated clearly that it shares the influence exerted by professionals. Accordingly, NCPMI advertising will tell its professional audience that:

"The Public Knows Clay Pipe Is Best"

This slogan has been incorporated into a new logotype element, which retains enough of the familiar shape and character of the established logo to maintain instant identification for NCPMI.

Clay Pipe Public Relations *reaches the* Mass Consumer Market

Job is to sell public, construction men on urgent need for improved sanitation facilities; SEC supplies information to all sources of communication to sell public on clay pipe.

When a house sewer clogs, a home owner is not long in calling for help. If the condition is not corrected immediately, the family's health is endangered, the property is blighted or damaged. Allowing this condition to continue is unthinkable.

Yet such a condition exists, and has existed for many years, on a large scale in thousands of communities across the nation. Thousands of people live in filth, they are constantly exposed to disease, to stench, to periodic floods.

The solution to this condition is modern, adequate sanitary facilities to carry away these deadly wastes. Yet, because of lack of immediate interest, apathy, or perhaps a thousand other excuses and reasons, nothing is ever done to improve this condition. Nothing is done, until one day the public awakes to this condition and demands improvement.

The Job of Selling

The job of selling the modernization of or installation of adequate sanitary facilities is, in the final analysis, a job of molding public opinion and causing that opinion to become vocal, thus producing the desired action on the part of public officials. The word "selling" is not a good one unless you can justify saying to someone that you want to "sell" him safety from disease; security, convenience, prosperity and civic pride. Rather, what is being done is the stimulation of the dormant potential interest and showing the public how it can obtain what it wants — what it truly needs.

Now, how do you form public opinion — how do you stimulate this dormant interest? The answer lies in "awareness and desire". When there is an awareness of a deficiency such as inadequate sanitary facilities, solutions are presented and opinions formed.

The basis for forming public opinion lies in communications. The Sanitary Engineering Committee, of The National Clay Pipe Association, carries on an active campaign by taking volumes of evidence in the case of modern sanitary facilities to the public through every means of communication available — the printed word, the spoken word and the visual word.

Newspapers and radio stations cannot create news, they can only report it. The Sanitary Engineering Committee is a source of information reporting the benefits of adequate sanitary facilities. For example, each month thousands of daily and weekly newspapers across the country receive material describing the advantages of a clay pipe sewer system. Each release distributed is done so in the spirit of public service. Maximum editorial acceptance is thus assured.

Many Different Forms

National Clay Pipe Manufacturers, Inc., publicity takes many different forms — installation reports, news items, how-to-do-it articles, service articles, columns, syndicate features, photos and editorials. In addition to advancing the cause of adequate sanitary facilities, The Sanitary Engineering Committee also distributes informational literature on new developments in home construction, plumbing codes and methods, highway drainage, airport drainage, and other construction work.

To do this, material is sent to state editors, real estate editors, news editors and industrial editors of newspapers across the nation. The results indicate that there is an insatiable demand for factual data such as is distributed.

Pipeline to Consumer

The most recent public relations program conducted for National Clay Pipe Manufacturers, Inc. is now in its sixth year. It is the industry's direct line to the consumer public

During the past six years, clay pipe publicity has brought the clay pipe story to millions of people. The Sanitary Engineering Committee carries on this campaign by taking volumes of evidence in the case of modern sanitary facilities to the public through every means of communication available.

— to the millions of people in those thousands of communities which are reaching the "grown up" size — large enough and important enough to seek the health protection insured by sanitary systems of their own. Last year alone The Sanitary Engineering Committee received clippings of published articles from well over 3,000 newspapers with a circulation exceeding 50,000,000 readers.

In addition to promotional material reaching those people who ultimately benefit from a vitrified clay pipe sanitary system, an article program in national magazines is used to advance the knowledge of clay pipe and its installation to those individuals who either influence or directly specify its use. This important group of sanitary engineers, municipal officials, contractors, plumbers, etc., is reached through the nation's leading business and industrial publications.

Reach 250,000 Readers

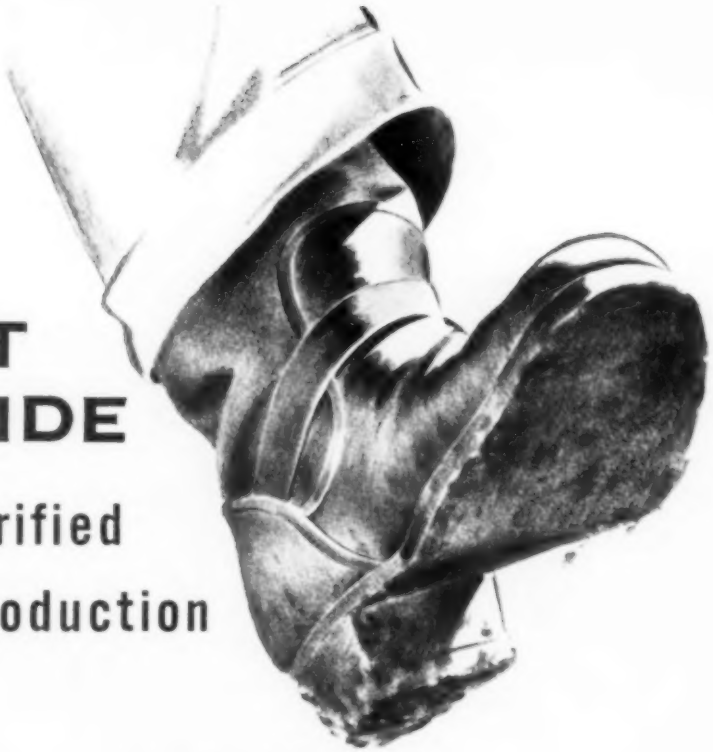
In 1956, The Sanitary Engineering Committee reported over 25 major articles published by such periodicals as American City, Public Works, Plumbing and Heating Journal, etc. These industry magazines have a circulation of well over 250,000 readers.

From the start, The Sanitary Engineering Committee of National Clay Pipe Manufacturers, Inc. has had one aim — that of maximum public service. Millions of people are today aware of the benefits of adequate sanitary facilities because of the campaign's slogan — Public Health is America's First Line of Defense.

NCPMI's public relations counsel examines results of one year's publicity campaign. The goal of clay pipe public relations is "Public Health is America's First Line of Defense."

GIANT STRIDE

...in vitrified clay pipe production



NEW CORONA PLANT NOW 60% COMPLETED

Holmes & Narver, Inc.—ENGINEERS
H. C. Smith Construction Co.
& Meyers Bros.
GENERAL CONTRACTORS
J. T. Thorpe, Inc.
FIRE BRICK CONSTRUCTORS

WHERE WE ARE. To date, our building program at Corona is right on schedule. Machinery and equipment are either on hand or delivery is guaranteed on schedule. The anticipated completion date – August, 1957 – is assured. Gladding, McBean men will move in before that time to tune-up and test-run the machinery in readiness for production of pipe from the high-quality Bedford Clays.

THE MOST MODERN manufacturing plant of its type, Corona was conceived and engineered to keep pace with the growth and demands of the West for both quantity and quality vitrified clay pipe, guaranteeing our customers adequate supply to meet all demands. When in production and utilizing the Bedford Canyon clays, Corona will open a new era . . . a giant step forward in high-production of quality-controlled products for the West.

GLADDING, McBEAN & CO.

Pipe Products Division

Los Angeles *San Francisco* *Seattle* *Spokane* *Portland* *Phoenix*

Timeless sewers with Dickey Pipe

You build generations of trouble-free service into sewers when you use Dickey Salt-Glazed Vitrified Clay Sewer Pipe. Regardless of the alkalinity of the soil...the pH of the sewage...the destructiveness of industrial wastes...or the attack of the dilute sulphuric acid formed from sewer gas ...Dickey pipe will remain unharmed. The chemically inert clay body of Dickey pipe is fused into one smooth, strong piece at temperatures in excess of 2000°F. It is one of the most dense, corrosion-proof materials known to man...the ideal material for sewers that must serve communities or industries for generations...despite the content of the sewage emptied into them.

Providing improved sanitation for better living

DICKEY sanitary salt-glazed clay pipe

W. S. DICKEY CLAY MFG. CO. | Birmingham, Ala., Chattanooga, Tenn., Kansas City, Mo., Meridian, Miss., San Antonio, Tex., Texarkana, Tex.-Ark.

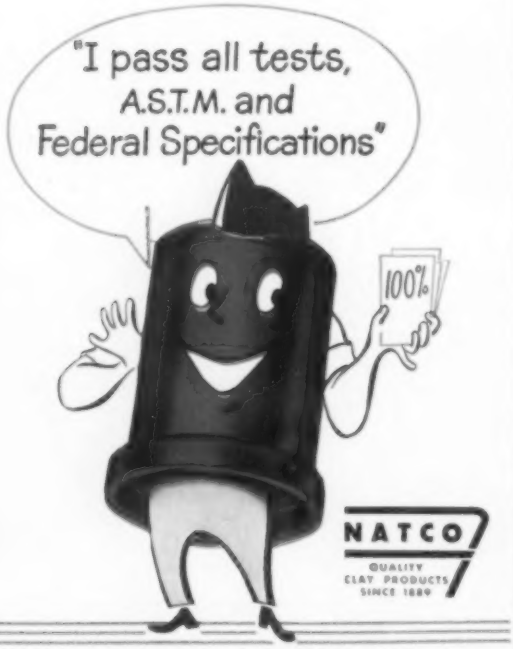
If it's made of clay it's good...if it's made by Dickey it's better

7803

NATCO CLAY

sewer pipe

COMPLETE WITH STANDARD FITTINGS IN THE REQUIRED PIPE SIZES



NATCO CLAY PIPE DIVISION
Sales Office and Factory
BRAZIL, INDIANA

NATCO CORPORATION

GENERAL OFFICES • PITTSBURGH 22, PENNA.

Locations of Natco Branch Sales Offices

Boston (16) 20 Providence Street
Chicago (6) 205 W. Wacker Dr.
Detroit (2) 2842 W. Grand Blvd.
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An Introduction to Plastisols--

What Are They
How Are They Used
What Can They Do For You?

Plastisols—a word becoming better known all the time in clay pipe plants —are claimed by their manufacturers to overcome a problem involved with pipes, the problem of joints or couplings.

The durability of pipe is well known but early joints weren't as durable. Concretes, asphalts, rope and many other materials proved difficult to apply in the field and also lacked such desirable features as acid resistance, flexibility, resistance to leaking, etc.

The answer to these problems seems to lie in plastisols, generally a form of poly vinyl chloride or copolymers of poly vinyl chloride and other resins.

What Are Plastisols?

Plastisol is a liquid until fused by the application of heat. Size variations in the pipe, within normal limits, has ceased to be a problem since once a mold size is established, the interference between the barrel and the socket of the pipe remains constant; the liquid plastisol then flows into any irregularities in the pipe.

The application of the plastic joint is done entirely and easily by the sewer pipe manufacturer, in a process we'll describe for you next month in a story on the American Vitrified Products plant at Brazil, Ind.

Are Plastisols Stable?

Since pipe is often stored unprotected in yards for long periods of time, stability of the jointing material must be good. The joint must have low compression set for many years; be resistant to various chemicals and impurities; be relatively unaffected by extreme weather conditions; and of course, adhesion to pipe is vitally important.

Various types of plastisols seem to meet all these requirements. Plastisol can be formulated to meet varying conditions; one company, for example, makes a general purpose plastisol, one for joints of lower compression, and one premium plastisol for use in pipe to meet high temperature climate conditions, etc.

To cover briefly the application, the plastisol is applied with a hand brush usually to a freshly-fired pipe. The pipe is then pre-heated to about 260-280F to drive off any moisture on the pipe and to dry the solvent from the adhesive. The primer cures under the heat and the pre-heat period partially cures the primer.

How Is It Put On?

Then the plastisol is poured into the molds. The fusion rate is arranged so that no leakage occurs under the mold and filling is done carefully to be sure no air is trapped under the top surface of the plastisol.

The pipe, with filled molds, is heated again to bring the temperature of the plastisol joint to the required fusion temperature, about 300-340F depending on type.

The pipe is cooled until the joint has gone down to about 240-270F when the mold is removed. If the joint is too cool, the mold is hard to remove and if temperature is too high, the joints may be torn so some care is needed in checking temperatures.

The pipe can then be removed to storage at once, with the only precaution being to see that the weight of the pipe doesn't bear on the spigot end. Alternating bells and spigot in stacking will take care of this requirement.

How Long Does It Take?

First, the manufacturer of the plastisols do not recommend high oven temperatures. A practical maximum,

Continued on following page

Next Month

How AmVit applies plastisol to pipe made at their new Brazil, Indiana plant.

Dickey has facts, figures to prove ease of laying, low operating cost of using plastisol-coupled pipe in actual job conditions.

PLASTISOL Continued

according to one maker, is about 410 F. The entire cycle, preheat, cure and cooling can usually be done in 40 to 60 minutes.

Handling and storage of the plastisol liquid materials present no particular problems. Some requirements should be met but the main requirement would seem to be to avoid contaminating the material.

Pipe Installations

Installing the plastisol-jointed pipe in the field is a simple operation. Essentially, all that's done is to shove one pipe into another after applying a sealer to the joints.

The plastisol manufacturers report tests show that the joints thereafter are highly resistant to wear and attack by various substances and liquids; joints remain permanently flexible to allow for line shifting after pipe placement; the seal starts tight and remains tight; handle well in shipping, storage and field use.

These are the plastisol joints or couplings now being made under several trade names by clay pipe manufacturers. Next month we'll publish another story on plastisols — how they're applied in the plant and how plastisol-jointed pipe is used in the field.

Dickey Boosts Combined Output 50,000 Tons

Modernized and expanded production facilities at the Texarkana, Texas and Pittsburg, Kansas plants have boosted the Dickey production of pipe and other products to more than 300,000 tons per year.

A 25,000 tons increase at each plant stepped-up total annual output by more than 20% and should help considerably in meeting the urgent demand for clay pipe.

The continuing fast pace in municipal, industrial and residential construction has resulted in a severe strain on Dickey production facilities that had been partially met by a continuing program of increasing production. This was insufficient and the expansion program at Pittsburg and Texarkana has recently been completed as a further step to meet the increasing demand.

Now the very latest automatic equipment and facilities, including additional grinding and tempering equipment, new horizontal extrusion machines, new drying facilities and straight line tunnel kilns, are producing longer lengths of improved quality pipe.

Total cost of this expansion: approximately $1,700,000.

Pearne-Lacy horizontal extrusion machines at Texarkana and Pittsburg produce 4 inch to 12 inch pipe in longer lengths. A battery of periodic loft dryers equipped with metal grating floors. Each plant has a 450' Allied 44-car tunnel kiln. Each car used is 10x10', holding 100 pieces of 8" pipe.

An improvement at Pittsburg is use of a new two-chambered continuous dryer 300' long.

Further Expansion

The expansion and modernization of Texarkana and Pittsburg is only part of Dickey's plans, according to general sales manager Joe Mason.

Mason says, "Our program also includes the modernization and expansion of the Birmingham plant, as to which plans are now being prepared with the hope that actual work will be undertaken in 1958."

"I might say that in addition to the plants mentioned, we also have an expansion and modernization program in mind for the plant at Saspamco, Tex., and which will be undertaken after the completion of the program at Birmingham," Mason continues.

"In addition to the expansion and modernization programs previously mentioned, we started the production of the plastisol compression joint under the trade name Dickey PVC Coupling at our Pittsburg, Birmingham and Chattanooga plants in 1956. We are now producing the coupling in 4, 6 and 8 inch sizes at those plants and, in a short time, will offer the coupling also in 10 and 12 inch size."

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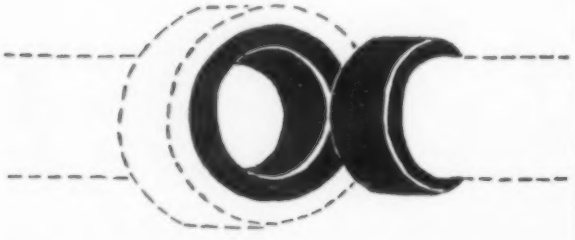

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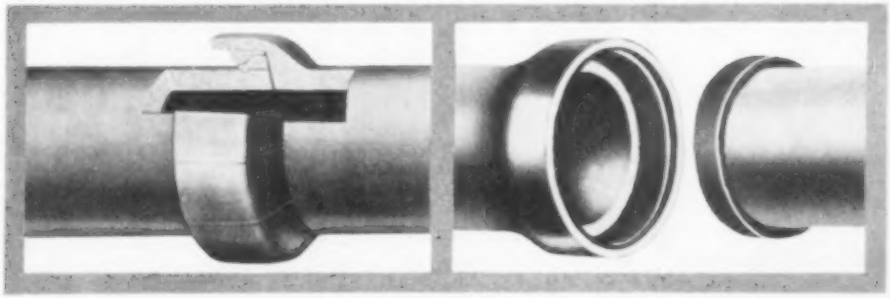
For years, Vitrified Clay Pipe has stood alone as the *one* pipe that never wears out. No matter how long it's underground, it remains unaffected by extreme temperatures or by the corrosive action of wastes. Now Logan offers this same time-tested Clay Pipe in longer King-Size lengths with factory-made joints that cut installation time by half or more — yet provide a tighter, more flexible line than ever before. All sizes are available with a complete line of fittings to meet every installation requirement.

LOGAN IS HEADQUARTERS FOR FACTORY-MADE CLAY PIPE JOINTS



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These Logan factory-made joints — coupled with new, longer King-Size lengths — cut labor cost drastically — yet assure a cork-tight, maintenance-free line that lasts for generations.

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Remains unchanged after prolonged storage.

A technical representative will call upon you at your request — no obligation.

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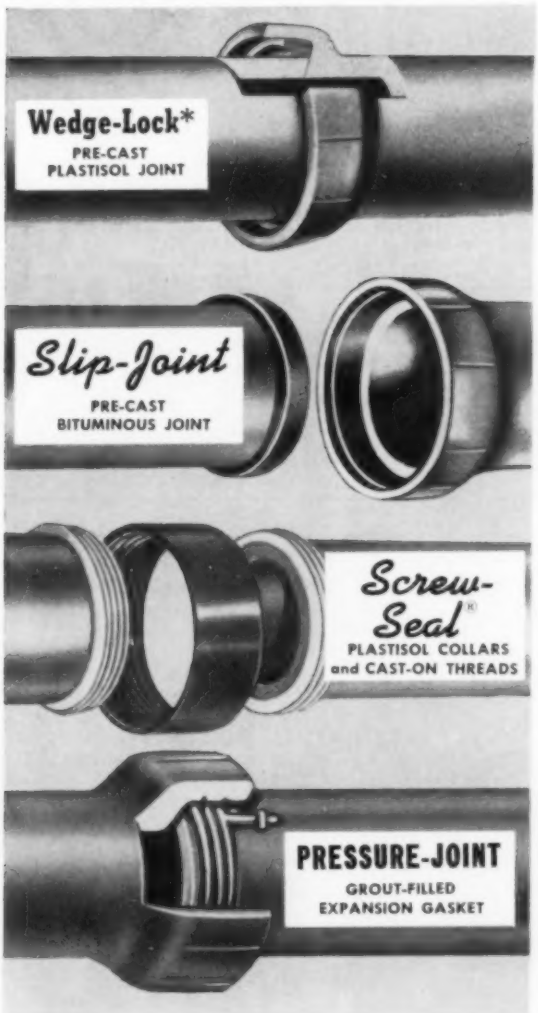
FACTORY-JOINTED CLAY PIPE



Symbol of an Industry's Progress

Not too many years ago, Factory-Jointed Clay Pipe was something the Clay Pipe Industry visualized and hoped for. Today, it has already created a minor revolution in installation techniques . . . making Clay Pipe a better servant for everyone.

We at Robinson are proud of the part we have played in developing these outstanding new products. But we are even more proud to be associated with an industry that is making such rapid strides ahead—with advanced new techniques developed through cooperative research.

The Clay Pipe Industry has a unique product—backed by more than a hundred years of proved performance . . . and yet as modern as tomorrow. At Robinson, we believe the best things are yet to come.

*Patents Pending. T.M. Reg. App. For.

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Specify UNION Clay Pipe and be assured you are using the finest.

Many brick and tile plants are now stocking and distributing **UNION** clay pipe to the retail and wholesale trade. We are anxious to open new distributorships. If interested we urge you to write us so we may point out how you too may merchandise pipe profitably.

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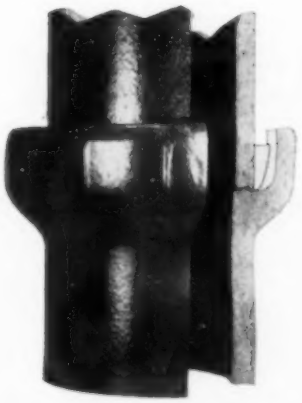
field tests prove AMVIT* JOINTED CLAY PIPE will outperform, outlast, substitute materials



During and following World War II, there were serious shortages of vitrified clay pipe. Production was being channeled into defense and military construction.

In order to meet pressing needs, many cities revised their codes to permit the use of *substitute* materials, instead of time-proven clay pipe.

Today, after facing the severe test of time and service, many of these *substitute* non-clay lines are breaking down. There have been hundreds of pipe failures, which endanger the health and welfare of the community and result in costly repairs.

Field tests on over 100 Amvit installations completed in the last two years show that Amvit jointed clay pipe positively cannot be harmed by sewage. It's strong and rigid, can't sag, rust or pit. Roots cannot pierce the dense, rock-like pipe walls or its tight compression joint.

Specify Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all standard fittings. It is available for immediate delivery in the Northeast and Central States.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

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CLEVELAND, OHIO

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YOU GET *All Three*

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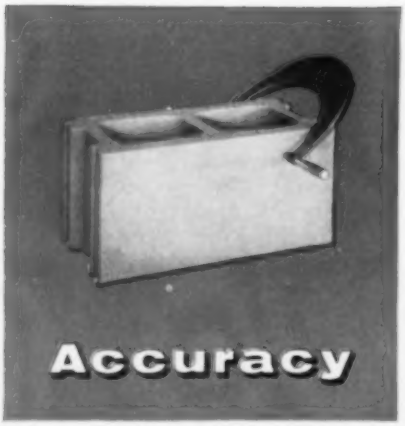
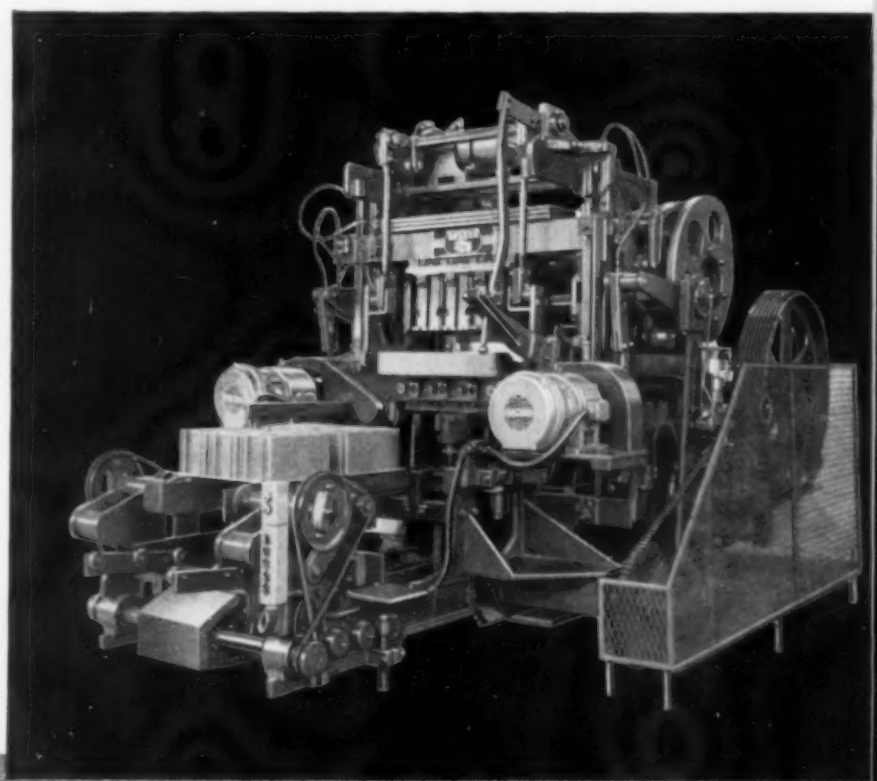


In the manufacture of concrete block, you naturally strive for beauty, accurate dimensions and high quality standards. Each unit must be of the proper weight and strength . . . have acoustical and insulating properties . . . be able to meet permeability tests. Block made on the Besser Vibrapac machine have ALL these characteristics.

Let's examine one of the units as it comes off the Vibrapac machine. Note the sharp true edges, the clean-cut corners, the firm consistency and the fine uniform texture of the block. Close tolerances are easily maintained for accurate modular dimensions.

Vibrapac Block excels because it has back of it the cumulative results of Besser Research and Testing. More than a half century of progress provides the background for producing the finest concrete block available in the Construction Industry.

Besser Vibrapac with the new AUTOMATIC FEED CONTROL . . . the latest Besser contribution to the Concrete Block Industry. Enables you to produce up to 10,000 units per day, 8" or equivalent, to any desired density and without any variance in height.



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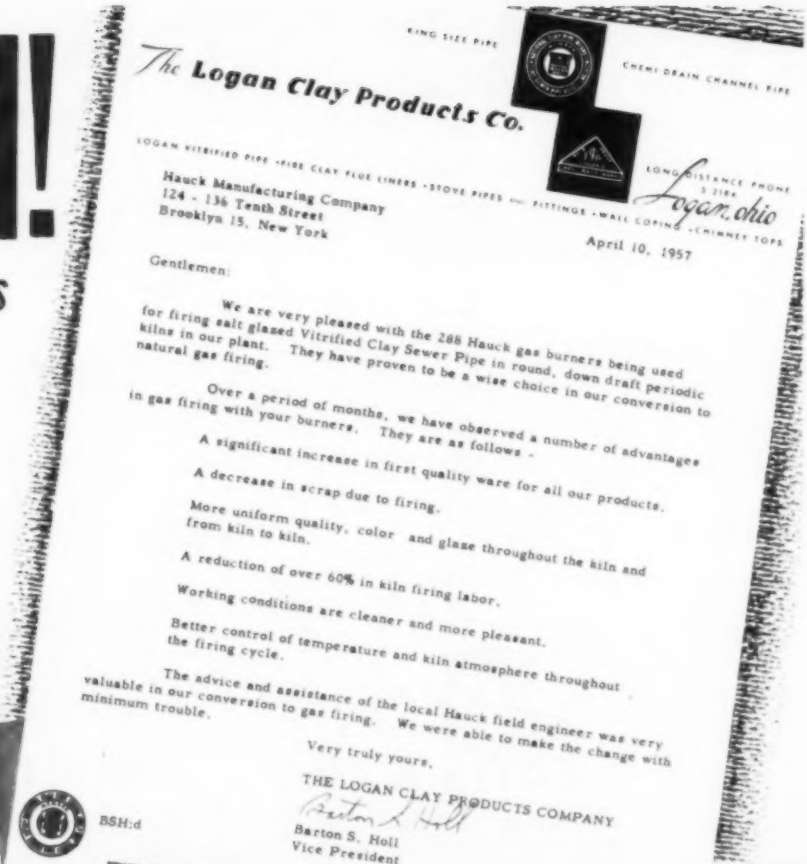
what this user says about

Firing Sewer Pipe with HAUCK GAS BURNERS



KING SIZE PIPE

CHEMI-DRAIN CHANNEL PIPE

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LOGAN VITRIFIED PIPE • PIPE CLAY FLUE LINERS • STOVE PIPES AND FITTINGS • WALL COPING • CHIMNEY TOPS

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Logan, Ohio

Hauck Manufacturing Company
124 - 136 Tenth Street
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April 10, 1957

Gentlemen:

We are very pleased with the 288 Hauck gas burners being used for firing salt glazed Vitrified Clay Sewer Pipe in round, down draft periodic kilns in our plant. They have proven to be a wise choice in our conversion to natural gas firing.

Over a period of months, we have observed a number of advantages in gas firing with your burners. They are as follows -

A significant increase in first quality ware for all our products.

A decrease in scrap due to firing.

More uniform quality, color and glaze throughout the kiln and from kiln to kiln.

A reduction of over 60% in kiln firing labor.

Working conditions are cleaner and more pleasant.

Better control of temperature and kiln atmosphere throughout the firing cycle.

The advice and assistance of the local Hauck field engineer was very valuable in our conversion to gas firing. We were able to make the change with minimum trouble.

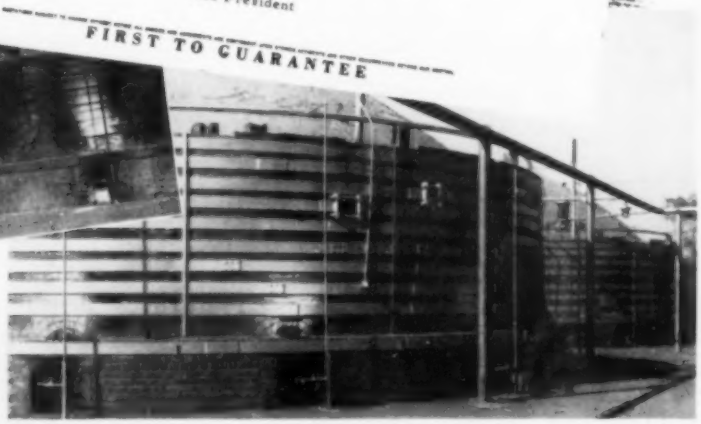
Very truly yours,

THE LOGAN CLAY PRODUCTS COMPANY

Barton S. Holl
Vice President

BSH:d

FIRST TO GUARANTEE



As also demonstrated on kilns in many other plants, Hauck High Pressure Gas Burners with Retain-a-Flame Nozzles are

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- **designed (patented) for better, low-fire turndown**
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MINUTE MONEY MAKERS

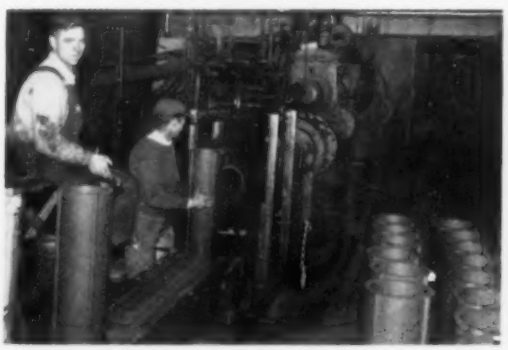
MINUTE MONEY MAKERS — a feature designed to give every operator in the heavy clay products industry ideas to aid their daily operation. The ideas may not be new but certainly they are good and they are the answer to problems that the editors have noticed in their extensive travel. Follow this feature each month for ideas that will make your work easier.

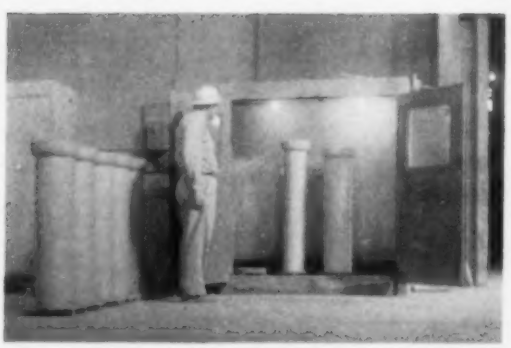
Keeps Constant Pressure

One manufacturer has installed pressure gauges for each burner on their periodic kilns. Using these gauges it is easy to maintain the same pressure at each burner and thereby make kiln firing more uniform. This method also simplifies the training of new employees as qualified burners.

Checking Aids Perfection

Flue linings for Van Packer chimneys are extruded at the Carbon Cliff Clay Company, Carbon Cliff, Ill. Because specifications for the tile require it to be perfectly round on top, each tile is checked for roundness by the man at the left. He has a stopper which is put into the tile and rounds off slight imperfections. The efficiency of the extruding equipment and the good workability of the clay make very few rejects. The checking operation, however, is most important for perfection.





Provides Quick Samples

This turntable dryer evolved out of a need for quick drying of sample pipe. Using other methods, often a whole aisle of pipe would be run before the quality could be determined. By turning the pipe in the box to distribute the flow of air evenly, enough shrinkage takes place in two to three hours to tell what needs to be done to produce #1 pipe.

AUTOMATIC DE AIRING PAUSE

How the Boyd Press makes maximum use of heavy pressures to insure density and reduced spoilage of refractory brick

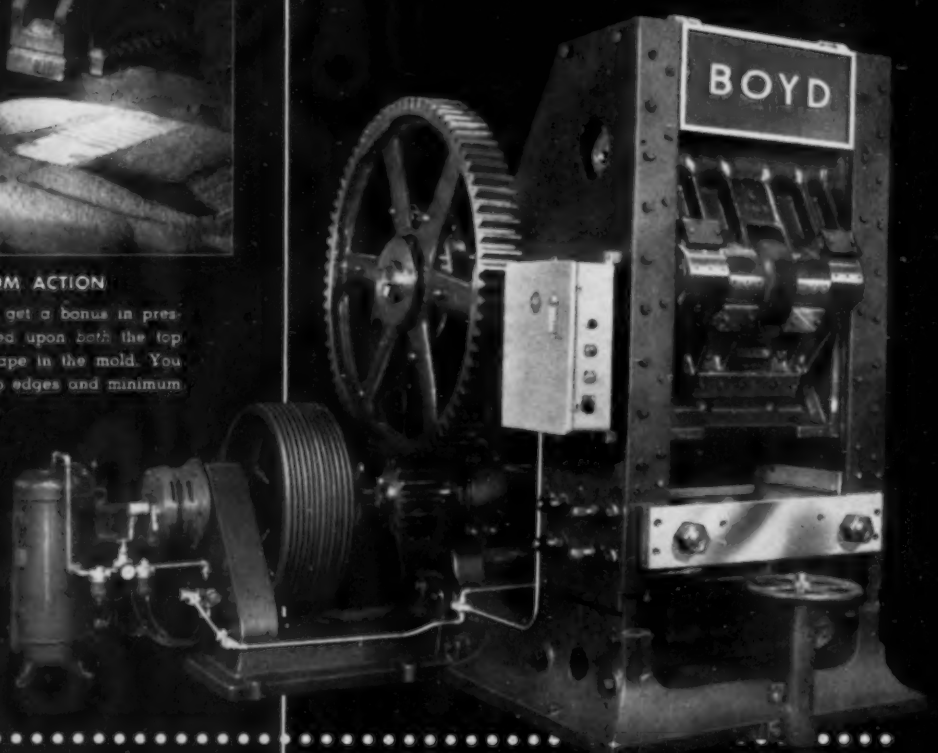
A special and unique feature, the automatic "De Airing" pause, is provided to give today's user the full advantage of the tremendous pressure output of the Boyd Press.

It is a momentary pause in the operation of the machine which permits trapped air to escape from the partially compressed material. With much of the air gone the mix is better oriented for the final compression stroke. The resulting shape is dense and precisely proportioned. It will show less distortion in firing and use . . . will better resist temperature change and resist spalling.

Automatic de-airing replaces a vacuum system previously used on Boyd Presses. It is fully automatic, faster, more positive and trouble-free. You can set the length and position of pause to meet your requirements. It's *another* reason why over 95% of this country's refractory production is turned out on Boyd Presses.

TOP 'N BOTTOM ACTION

With the Boyd Press you get a bonus in pressure—because it is exerted upon *both* the top and the bottom of the shape in the mold. You get uniform density; sharp edges and minimum distortion in firing or use.



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NEWS OF REFRACTORIES

Vesuvius Crucible Plans $125,000 Expansion

A. J. Jackman, president of the Vesuvius Crucible Co., Pittsburgh, has announced that the company board recently allocated upwards of $125,000 for expansion of Vesuvius' manufacturing facilities this year.

Vesuvius is a large producer of graphite refractories and graphite stopper heads, silicon carbide crucibles and refractory shapes.

The company plant is at Swissdale, near Pittsburgh.

Richardson Heads Porter Division

E. M. Richardson has been appointed to the newly-created post of general sales manager, Refractories Div., of H. K. Porter Co., Inc. He will direct the coordination of Porter's sales for Laclede-Christy, McLain Fire Brick and Mullite refractories.

Sales Rise, Net Drops At Carborundum Co.

Carborundum Co. reported its consolidated net income for the first three months of this year fell to $1.4 million, a drop of 9% from $1.6 million in the same period of 1956.

Sales in this year's first quarter rose to $27.6 million, an increase of 8% from the same period last year. The latest earnings are equal to 85¢ a share, compared with last year's 94¢ a share.

Directors declared a dividend of 40¢ a share on common, payable June 10 to stockholders of record May 17.

Quarter Net, Sales Up At Basic, Inc.

First quarter increases in both sales and net earnings have been reported by H. P. Eells, Jr., president of Basic, Inc., with net income up almost 14% over the same period last year.

Basic's net income for the first quarter '57 totalled $448,129 on net sales of $6.4 million compared with 1956 figures of $401,628 and $6.1 million.

Net income after preferred dividends equalled 56¢ per share, compared with 1956's 49¢.

Porter Sales Up By $34 Million

Net sales of H. K. Porter Co., Inc., in 1956 were $140.6 million compared to $106.09 million in 1955, according to the firm's annual report. Net income for the 1956 period was $7.5 million amounting to $7.07 per common share, comparing with figures of $6.4 million and $6.15 for 1955.

During the year the company acquired the Mullite Refractories Co. and has under construction now a basic refractories plant in Pascagoula, Miss. This plan will take magnesia from sea water for use in refractory production. Emphasis in the company, the report states, will be on expanding its product lines within the existing organization.

TRI Meet June 27-28 At Greenbrier

Robert W. Knauft, president of Charles Taylor Sons Co., Cincinnati, will address the TRI membership at the annual Spring Meeting at the Greenbrier, White Sulphur Springs, W. Va., June 27-28.

Knauft will tell of his "Impressions of the Refractories Industry in Western Europe."

Weir of H-W Dies at 57

Frank Wier, assistant general sales manager for Harbison-Walker Refractories Co., Pittsburgh, died April 23 after an illness of several months. He was 57.

He became associated with Harbison - Walker in 1931 and served in sales positions in New York, Boston, Buffalo, St. Louis and Pittsburgh. He was appointed district sales manager in St. Louis in 1946; district sales manager in Pittsburgh in 1949; and assistant sales manager in January, 1955.

Mexico Names Leach President, Arthur Made Board Chairman; Plan Stock Sale

NEW OFFICERS AT MEXICO REFRACTORIES: Back row, R. A. Hitchins, C. A. Bachmann, C. A. Smith, and P. J. Geib. In front are new president W. Basil Leach and John B. Arthur, chairman of the board.

W. Basil Leach has been elected president of Mexico Refractories Co., Mexico, Mo. and J. B. Arthur has been promoted to board chairman as a result of a stockholders meeting. Arthur will be chief executive officer also.

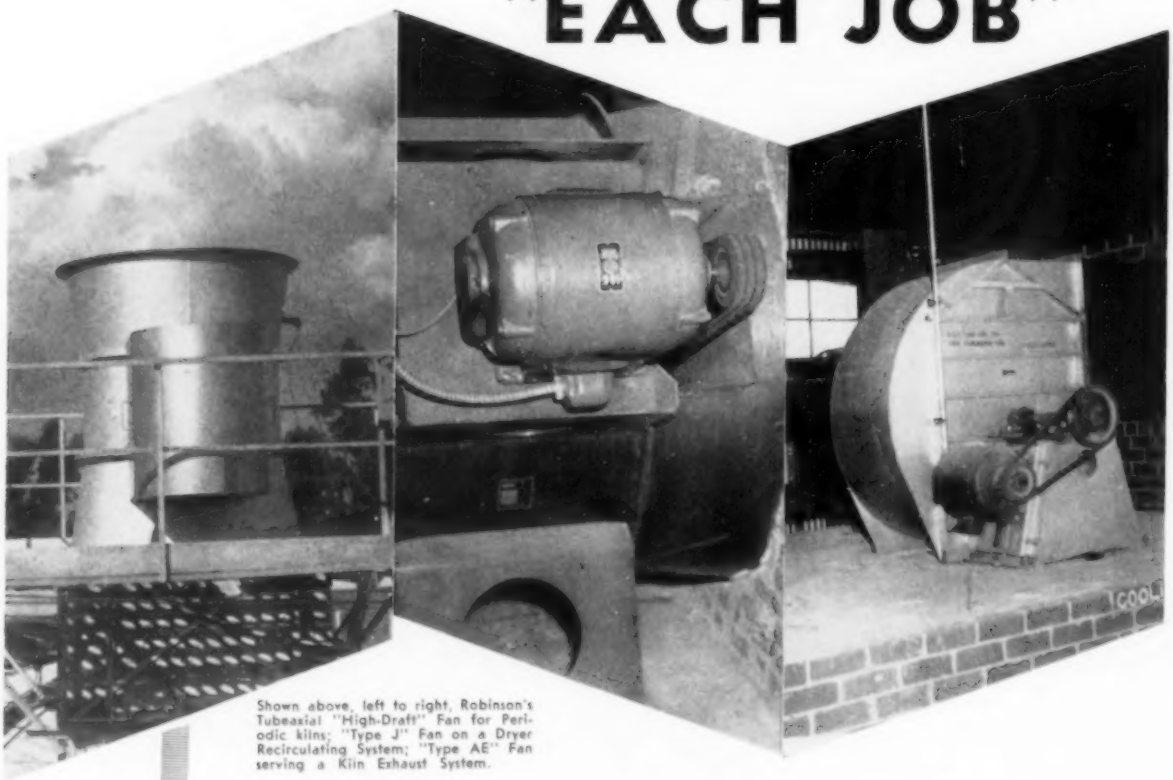
C. A. Smith, vice president and chief engineer, will hold the newly-created position of executive vice president. Carl H. Bachmann, production manager, was elected a vice-president.

The stockholders voted to increase the board from seven to nine and elected Roger A. Hitchins and P. J. Geib to the new posts. Both men are officers of the National Refractories Div. of Mex-R-Co. Geib is assistant treasurer and Hitchins is vice-president and manager of the eastern division. All previous board members were re-elected.

An amendment increasing authorized capital stock from 700,000 to 1,200,000 shares of common stock was adopted at the meeting. The stockholders also authorized the sale of a minimum of 80,000 shares of authorized, unissued common stock to a group of underwriters at such time and price, and upon such terms and conditions as may be determined by the board chairman and members of the board.

The board also placed on record the purchase of Refractories Engineering and Supplies Ltd., Hamilton, Ont., Canada, in which it previously owned 50% interest.

A ROBINSON FAN FOR "EACH JOB"



Shown above, left to right, Robinson's Tubeaxial "High-Draft" Fan for Periodic kilns; "Type J" Fan on a Dryer Recirculating System; "Type AE" Fan serving a Kiln Exhaust System.

ROBINSON Engineered Fans are serving every division of the Heavy Clay Products Industry—

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Tunnel Kilns and Periodic Kilns—

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SEE OUR CATALOG IN Ceramic data book Page 277

Open Hearth Meet Reports On Refractories

Types of furnace construction, effects of different refractories studied

The fortieth conference of the Blast Furnace, Coke, Carbon and Raw Materials Committee and the National Open Hearth Steel Committee was held April 8 to 10 in Pittsburgh, Pa.

Two very important subjects dominated the refractories session. One was the result of the use of basic brick in open hearth roofs, and the second was the new use of electric cast, chrome magnesite brick in open hearth hearth roofs.

In the opening session, H. M. Kraner, ceramic engineer for Bethlehem (Pa.) Steel Company, discussed the variations in design of blast furnaces and their effect on refractories.

He stated that in the zone under the ware plates, refractories wear when they are soft, and will disintegrate because of carbon disintegrating. Harder refractories improve conditions, but other parts are weak and therefore breakdowns occur. In discussing the armored section he said it must be well done in order to hold up. He did not think that armoring brick is the complete solution to the problem. He then went into the use of water cooling, and discussed several methods of applying it.

Compromise Works

He did say that the best refractories solution without water cooling is a compromise between hard brick, to resist abrasion, and soft brick, to resist heat.

The discussion from the floor involved the type of plates used in the armored section. It was pointed out that Z plates are better than either the L or T plates. Armoring of course increases the load on the refractories but resists impact. Any loosening of the armoring allows gas to penetrate into the refractories and start disintegration.

Stack Cooling Plates

J. W. Duncan, superintendent blast furnaces, and R. E. Turman, technological coordinator blast furnaces, Gary (Ind.) Steel Works, United States Steel Corporation, discussed an experience with stack cooling plates. He stated that stack cooling plates were used to lower temperature of brick preventing carbon monoxide attack. He then want into great detail to show how he had provided for changing plates when they were damaged or out of place.

The plates were in a water-tight box, and had to have the following five properties: 1) they had to be adaptable, 2) they had to be readily available for inspection and replacement, 3) water leaks should let the water out and not force it into the stack, 4) expansion had to be provided for, and 5) a lock for the cooling plates had to be provided.

He summarized that stack cooling can extend the life of the stack.

G. D. Elliot's paper on Bosh Construction was read to the meeting in his absence. The following statements were made:

Bosh Construction

The location of the top of the bosh can never be fixed exactly without reference to other factors, so that the final position is always a compromise. So much so that it is now the universal custom to separate the bosh and the stack by a few feet of parallel.

It has been said by many operators that this parallel is to give the furnace room to make its own lines, which really means to decide the correct location for the top of the bosh.

In this connection perhaps too little attention has been attached to the blown out lines of furnaces everywhere. No matter what the practice, the raw materials used, the life of a campaign or the rate of operation, all blown out furnaces show an upward extension of the bosh.

A typical blown out line is given in Figure 1.

A blown out furnace of 1956 is nearer, as regards the bosh section, to the furnace of 1880 than it was when blown in. There is some evidence that the upward extension of the bosh during operation is caused by slag attack rather than by erosion.

Swedish Bosh

This fact must raise doubts as to whether current bosh design is correct, and these doubts must be some-

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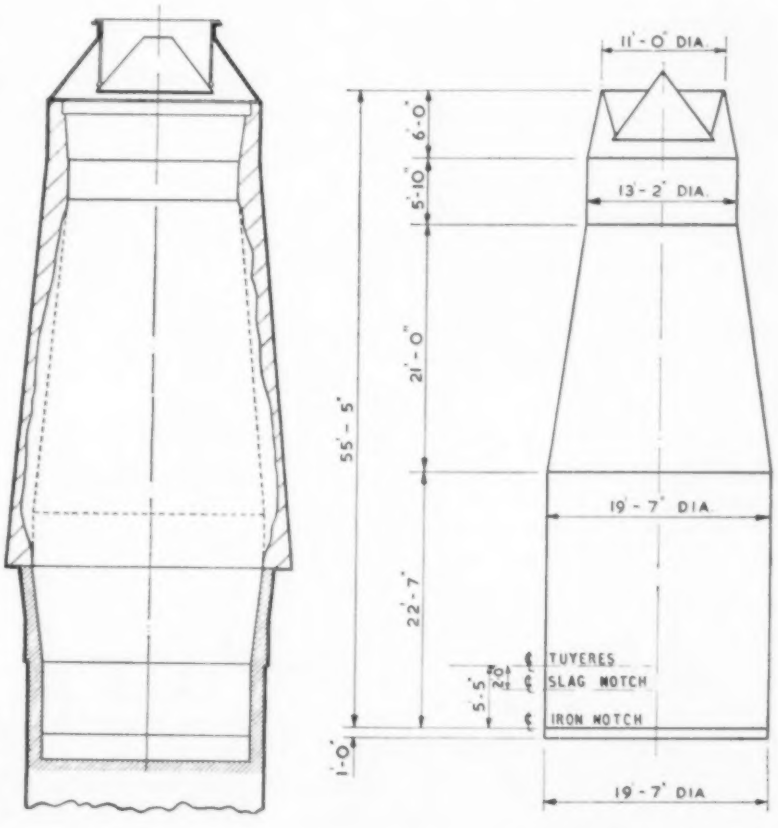

Figure 1

Swedish blast furnace

OPEN HEARTH Continued

what confirmed when we look at the lines of small but extremely successful furnaces now operating in Sweden. In these furnaces the bosh is rather different from the so-called "no bosh furnace" built in Chester, New Jersey, 1884. That was an unsuccessful experiment.

By and large standard bosh construction now involves a thickness of fireclay brick of about 27 inches. This mass of masonry is usually cooled by a large number of inset copper cooling plates. The whole finishes as a complicated mixture of pipes, copper and very much cut-about brickwork.

Something Simpler Needed

This type of construction has given admirable service in very many installations, but that in itself is not an argument against seeking something better, and anyone who has carried out the hunt that is usually necessary to identify a leaking bosh plate will agree that something simpler is very desirable at times.

By the use of welding, it is now a simple matter to construct a steel-plate packet which is completely water and gas tight. A welded packet has no projections such as lapped joints and rivet heads to interfere with the uniform flow of water.

Theoretically, providing they are protected from air and water, carbon refractories would work without cooling in the bosh of a blast furnace. To do so, of course, would be absurd because the shell temperatures would be so high as to lead to warpage and splitting of the casing and so to air infiltration.

So, from many points of view, carbon in the bosh must be cooled. Because of its comparatively high thermal conductivity, carbon can be cooled by shower cooling through a greater thickness than can ever be done with normal fireclay refractories.

It is cheap, simple, and virtually foolproof in that water leaks no longer occur.

Design Works

The design is not untried or unproved. It has been used at Appleby-Frodingham for many years, on furnaces ranging in hearth diameter from 17 feet to 31 feet. The jacket is welded tight at top and bottom. Indeed, Appleby-Frodingham furnaces are now continuous steel from the top deck to foundation. This construction has eliminated many troublesome points of gas leakage. Compared with orthodox design, this type of bosh is low in capital cost and lends itself to rapid construction.

Refractories and Masonry Session #1

H. C. Paxson, Supervisor, Masonry and Labor, Lukens Steel Co., Coatesville, Pa., and George Anthony, Ceramic Engineer, Youngstown Sheet and Tube Co., Youngstown presided over this session.

A new approach to Open Hearth Maintenance was the topic of E. W. Hunziker, Division Superintendent, Open Hearth and Foundry, and M. E. Strate, Assistant Division Superintendent of Maintenance and Utilities, Columbia-Geneva Steel Div., United States Steel Corp., Salt Lake City.

Prefabricating Open Hearths

Their aim was to save 20% in the construction costs of open hearth furnaces through applied efficiency. The furnace was completely prefabricated outside of the factory. The prefabrication took place on railroad cars, and the framing for the open hearth amounted to 500 tons while the refractories added another 500 tons, making a thousand tons total construction on wheels.

After the open hearth was completely constructed and the old furnace removed, the new one was wheeled into place. The railroad cars moved about 40 feet per minute going in to the furnace room. The movement off the railroad tracks into position over the open hearth foundation was at the rate of one foot per minute.

The method of prefabricating outside of the factory and moving a completed furnace into place was satisfactory; however, the engineers stated that a factory should be designed for that type of maintenance for better operation. Time, money and effort can be saved by this type of maintenance.

A. W. Schoenebeck, Superintendent, Maintenance and Construction, Granite City Steel Co., Granite City, Ill., talked on "Prefabricating New Fronts for Open Hearth Furnaces Saves Time and Money."

New Fronts

The Granite City Steel Company is engaged in an expansion program that will add approximately thirty per cent to its present open hearth capacity of 1,080,000 tons a year. This is to be accomplished without adding any new open hearth furnaces to the seven that Granite City Steel already has, (three 285-ton furnaces and four 250-ton furnaces).

A key element in the expansion—and one of the first to be completed—was the replacement of the fronts of each of the open hearths.

What management wanted was a method of replacing the fronts that would combine economy of cost with the minimum possible furnace down time. "Furnace Availability" had to be kept at a maximum.

The new furnace fronts were necessary for two reasons:

One—That their open hearth capacity is being increased by the use of the largest charging boxes in the industry—boxes with a capacity of 61 cubic feet. These have replaced their 32-cubic-foot charging boxes. But they could not be put into service until Granite City Steel had installed larger furnace doors, and larger doors meant relocation of the buckstays.

Two — Their three largest open hearths were installed in recent years, and have water-cooled buckstays. The four smaller furnaces—three completed in 1943 and the fourth in 1950 did not have water-cooled buckstays. They needed new fronts anyway because of distortion to their buckstays.

PreFabrication

The method finally decided on enabled them to change a single furnace front in the average overall time of 58 hours—a substantial gain in "Furnace Availability" over any of

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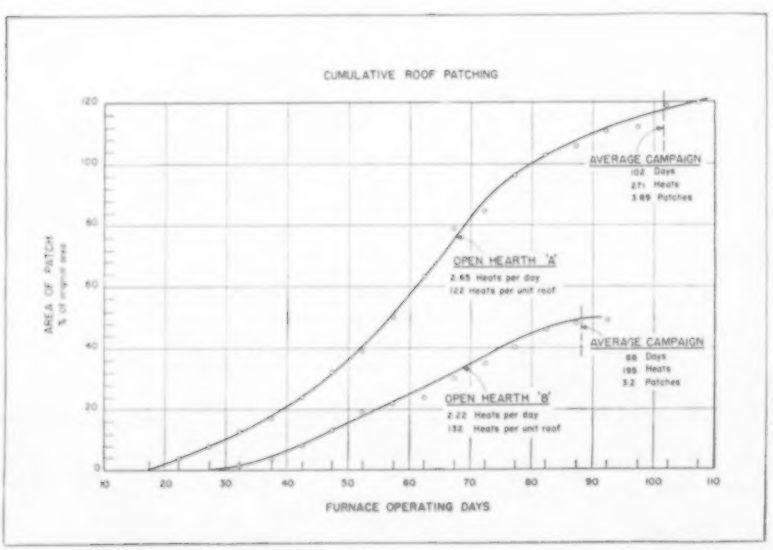
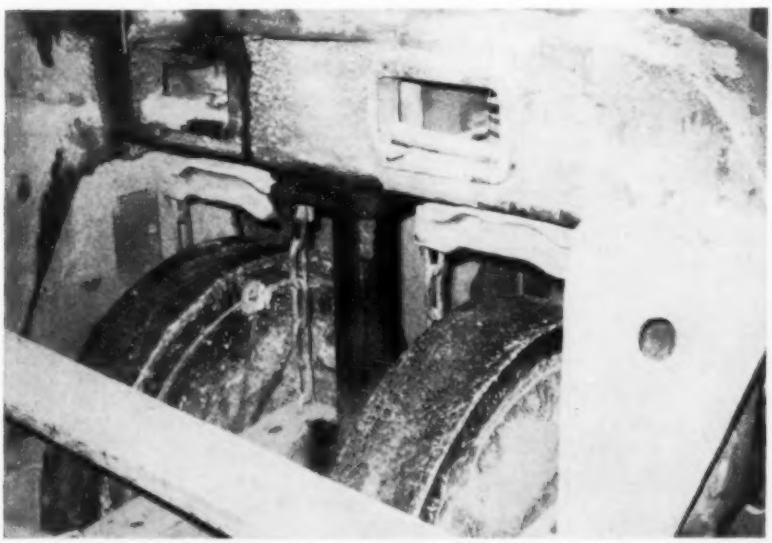


HARD-FACING HIGHLIGHTS in brick plant operation

Stoody hard-facing alloys reduce wear—save replacements —increase production

Several years ago Dixie Fire Brick Co. at Kimberly, Alabama set up a hard-facing program designed to cut down-time for replacement of wearing parts throughout the plant. Some of the procedures described below are both interesting and original; all are the result of extensive experimental work. The techniques employing Stoody alloys are now standard within the plant. They have been notably successful in lengthening the service life of equipment and increasing the plant's output.



MULLERS—these 60" muller tires, 3" thick with a 12" face, are regularly restored by a build-up material which is finished off with a pass of Stoody 21; these tires are not ordinarily allowed to wear too severely, but are retouched with the hard-facing alloys to keep them at peak production. Skip welding is used, the muller being rotated 180° after a few beads have been laid down, to prevent overheating of one section or setting up stresses. Stoody 21 has kept these mullers in operation for some five years at low cost.

EXTRUDING MACHINE—a number of parts of the brick extruder are regularly hard-faced with Coated Stoodite; they include *augers, shredders, sealing dies, spacing rings* and *paddles.*

The CHILL CAST GRAY-IRON AUGERS are pre-heated to 900° F. in the furnace; flights are hard-faced on the pressure face extending back about 3" from the edges which are then overlaid full width and the augers are finally slow cooled.

The sealing die, shredder and spacing ring are hard-faced over the entire outer surfaces with Stoodite to provide maximum protection. Service life is thus increased 2 to 1 over stock replacements.

Pug mill paddles which get extremely heavy wear are covered with Coated Stoodite.

All wearing equipment lasts longer with Stoody hard-facing alloys—with very real savings. You will find detailed application data on all types of brick and clay plant equipment in the Stoody Guidebook. Ask your dealer for a copy (check the "Yellow Pages" of your phone book) or write direct for this book. It's yours at no cost.

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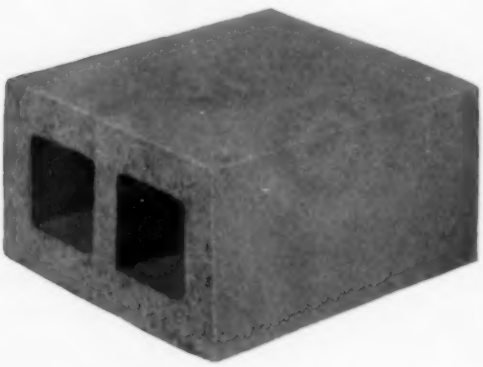

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the other methods for installing new fronts that was considered.

The front was fabricated prior to the time of the furnace going down.

C. L. Meloy, Engineer, Research Dept., Bethlehem Steel Co., Bethlehem, Pa. talked on Open Hearth Roof Patching.

Why Roofs Burn Out

The roof is almost invariably the section which must be repaired several times before the furnace has made sufficient steel to make the operator to go to the expense of rebuilding.

Iron oxide and some lime reach the roof brick and are drawn into the brick by capillary action. Once in the brick these fluxes start dissolving the silica matrix, thus increasing the size of the pores and capillaries. In time the pores and the capillaries between them become so large that they fail to hold the liquid against the pull of gravity. When this happens the liquid runs out leaving a rat-holed or honeycombed structure familiar to all operators.

This is a continuous process with a back-and-forth or in-and-out movement of the fluxing materials inside the roof brick which results in the unusual distribution of oxide materials.

Under normal operations the roof temperature equilibrium is such that this zone does not melt. However, accidents will happen and a roof may get "burned" in a very short period of time. The contaminated zone of the brick then becomes exposed to the furnace temperature and rapidly drops into the furnace bath.

Reducing Atmosphere

The same effect can be obtained by exposing the roof to a reducing atmosphere. As the oxygen pressure in the furnace atmosphere is lowered the ratio of FeO to Fe_2O_3 is increased.

Thus, without increasing the iron content in the high flux zone its melting temperature may be lowered to the point where the whole zone may become liquid. In this way it is possible to "burn" a roof without increasing the temperature at all, but the results in terms of the life of the roof are the same.

In most furnaces the area over the taphole is the section of the roof which shows the most severe wear. The temperature and flux concentration are such that the surface is eroded too rapidly. This type of high-speed wear may occur at any point in the roof if the design or operation of the furnace is faulty.

The deterioration of a roof is a progressive process which is not properly reflected by the length of brick remaining but is more nearly measured by the time it has been in operation.

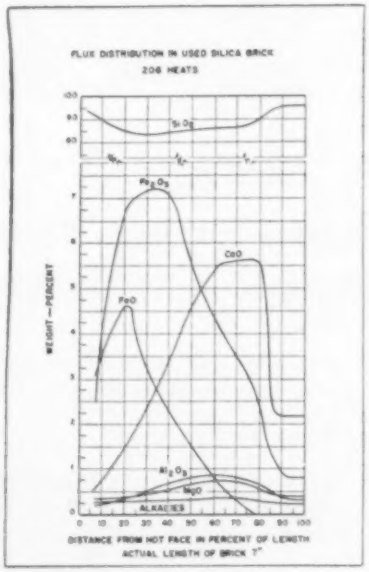
The normal procedure for hot patching is to replace the thin areas on the roof, extending the patch until 9 or 10 inches of the original brick remain. The size of this hot patch may range from a few square feet to, in some cases, practically the entire roof from knuckle to knuckle.

Patching Methods Vary

The method used to install these patches will vary from shop to shop and does not significantly affect the life of the patch as long as it is done well. The proper contour of the roof must be maintained or it becomes unstable. This is attained by using patch brick of a length that will approximately match the length of the remaining brick. The use of special shaped brick to speed up the job is frequently found helpful as it permits the installation of large patches with a minimum of handling of "Z" bars, sheet iron, special hooks, and the like.

Hot Patching Study

To examine how hot patching practices affect campaign life a study was made of the hot patching practices in two open hearth shops which use the same roof brick and have about the same refractory brick consumption per



hour. The results of this study are shown on page 100.

The effect of the more severe conditions on the roof of Open Hearth "A" which burned 72 million Btu/hr. vs. 53 million Btu/hr. in Open Hearth "B" is readily apparent. It was necessary to start patching much earlier and to install more extensive patches to maintain the operation required of the furnace.

The time up to the first patch is an expression of the rate of roof wear although the rate of patching at this time is about constant. This is indicated by the slope of the curves near the base line.

For both shops the rate of patching required at this stage is about 9 per cent of the roof area per ten days of operation. In Open Hearth "B" this rate appears to hold about constant over the life of the roof after patching has started.

On the other hand there is a period at the middle of the campaign of Open Hearth "A" furnace where very large patches are installed and the rate of patching is 25 per cent per ten days of furnace operation. This is due to the fact that the more severe demands made on the roof have brought a large area to the place where it must be replaced if the 100-day campaign is to be realized.

This practice means extra cost in terms of roof brick consumed or area patched but this is a highly profitable investment in terms of lower total refractory cost per ton of product. In this particular study there were a number of cases where over 80% of the roof was replaced at one patch in order to extend the campaign life to a more economical point.

Patching Rate Drops

After placing the large patches, and largely as a result of them, the rate of patching drops to about 7% per 10-day period as the end of the campaign is approached. As they see the end of the campaign approaching the operators become less and less willing to spend money; only the most urgent patching is done and those patches which are installed are as small as possible.

Banding Increases Nozzle

A. Sontz, Ceramic Engineer-Development, and R. N. Ames, General Supervisor, Ceramic Development, South Works, United States Steel Corp., Chicago, spoke on the "Effect of Banding and Oil Impregnation of Nozzles on Pouring Performance." Nozzles fail, he said, because of erosion and thermo shock. He tried to lengthen the life of nozzles by impregnating them with an oil and by steel banding the nozzles.

Steel banding did not stop cracking but did keep the cracks from opening up. In many cases the cracks sealed up completely in banded nozzles.

The impregnated nozzles did not show reasonable extensions of life. His conclusion was that all nozzles will crack. Bonded nozzles will keep from opening the cracks, and a 2% increase in performance was noted. Impregnated nozzles showed no increase in performance.

J. J. Hazel, Chief Ceramic Engineer for Republic Steel Corporation, Cleveland discussed this topic. He experienced one-third increase in life because of banding. He also stated that impregnating helps to a degree.

The final paper was on the Evaluation of Cast Refractory Hot Top Linings, by R. J. Tatousek, Practice Fore-

(Continued on following page)

Mixing bulk materials? Read how . . .

Brimming Buckets Solve This Problem For Robinson Brick & Tile Company, Denver

From flour-fine, tightly-packed particles to chunks two feet in diameter—that's the mixing problem faced by Robinson, largest brick and tile manufacturer west of the Mississippi. Fourteen different clays are stockpiled around a central batching area, to be mixed as needed by a Michigan Model 175A Tractor Shovel. *Only the Michigan's ability to load a full bucket every time keeps these ingredients in correct proportion.*

Demonstration sells machine

Loaders formerly used were a headache; operators got ¾ bucket out of one pile, only ½ bucket out of another. Result? Improper proportions, production slow-downs. Moreover, the old loaders had the wrong type of bucket action, couldn't mix ingredients on the floor before loading them into the grinders. Then the owners saw what a Michigan could do—right in their own plant. They bought it!

Mixes 720 tons daily

Today the *one* 2¾ yard Michigan Model 175A Tractor Shovel has replaced *two* old-style loaders. It moves and mixes 720 *tons* of clay per day, works a 72-hour week under all conditions—from choking dust in summertime to deep snow and mud. Its operator can now *keep six mixes going* on the floor at all times! Unexcelled breakout force, low-level tip-back and low-level carry assure a *full* bucket *every* time . . . greater speed and maneuverability keep material flowing from stockpiles scattered around a 200-yd radius up to 50 yds away from the grinding plant.

Now's the time to find out how Michigan can hike output, cut costs *for you*. Your local Michigan Distributor will be glad to arrange a demonstration in your plant— *you pick the job!* Six models available, from 16 cubic *feet* to 2¾ cubic *yards*. Thirty-eight different buckets and attachments to fit precisely your requirements. Finance plans suited to your investment program, too—including the popular Clark Lease-Purchase Plan, which puts one or more Michigans to work for you without a penny of capital.

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man No. 1 Open Hearth, and A. T. Peters, Metallurgist, Quality Control Dept., Inland Steel Co., East Chicago, Indiana. He found that cast hot tops had twice the life of brick hot tops. The refractory, however, cost twice as much.

Where brick hot tops averaged about 75 heats, the casts hot tops average 140 heats.

He did, however, notice much less erosion in the brick hot top than in the cast hot top.

Refractories and Masonry Session #2

W. J. Scharfenaker, Superintendent, Masonry Dept., Ford Motor Co., Dearborn, and E. B. Snyder, Refractories Engineer, Wheeling Steel Corp., Steubenville, Ohio, presided over this session. The first paper, a Progress Report on All-Basic Furnaces, was given by J. E. Harrod, Assistant to Div. Superintendent, Steel Production, South Works, United States Steel Corp., Chicago.

He reported on a basic furnace which totalled 6,868 heats, as against a silica furnace with 6,190 heats. He says that the firing rate on the furnaces was 10 to 20% better than average. Also, higher temperatures were allowable.

He reported that after 9 years, the checkers were still good. Top courses, however, were replaced. Very soon the entire checkers will be replaced, as soon as a new roof is needed.

He went into great detail discussing the changes in design on the furnaces, which he claimed, aided in lengthening their life.

The average basic campaign was 237 heats, while an almost identical silica roof ran 111 heats. This was 2.14 times in added life. He did point out that there was no cost advantage, however, since the basic brick was more costly.

Another campaign showed basic running 255 heats, while silica ran 102, which shows an increase in life by 2 times. Current experience shows that the ratio might go to 3 to 1.

Production Increased

Further observations show that the rate of a basic furnace is 10 to 15% greater. The fuel consumption is higher for basic, but the differential is closing up between it and the silica roof. The all-over experience showed a production increase of from 6 to 21%, with an average of 13.3%.

A. H. Sommer, Vice President and General Superintendent, Keystone Steel and Wire Co., Peoria, Illinois, reported on progress on open hearth construction.

Repairs showed 35% on the first basic roof, 67% on the second silica roof, 55% on the third basic, and 48% on the fourth basic roofs. His general experience was in the lengthening of life on basic roofs.

J. F. Pollack, Superintendent, Open Hearth Dept., Jones & Laughlin Steel Corp., Pittsburgh, reported on flat basic roofs. He made a comparison between two types of basic brick and found them considerably different. He stated that the campaign in the German roof life is something like 959 heats American roofs are half of that rate, providing they are basic.

As compared to silica, he said that the silica roof cut the rate because it could not be operated over 2900°F., however, the silica roof held up as well as the basic providing the temperature was kept below the critical point.

Levi Yager, Open Hearth Superintendent, Laclede Steel Co. in Alton, also reported on flat basic roofs.

P. W. Nuttin, Assistant Superintendent, No. 2 Open Hearth, Inland Steel Co., East Chicago, Indiana, also reported on the flat, basic roof. He said that the basic roof produced 17% more ton, 6% better rate, 2% more fuel, cost 9% more to rebuild, and 2% more to maintain. The greater availability is probably the greatest asset for the basic roofs, since the campaigns run longer.

In the final paper, C. W. Cravens, Assistant District Manager, Republic Steel Corporation, Cleveland, reported on a sprung basic roof.

More Tonnage Wanted

All open hearth operators are under constant pressure to increase tonnage and decrease costs. The persistent problems are foremost at all times. No progressive operator is satisfied with the present 30 to 35 tons-an-hour open hearth furnace.

There is a continual push towards 35 to 40 tons an hour with its pernicious effect on furnace life. One of the most important factors standing in the way of higher tonnages is the refractory linings, even though the refractory manufacturer continues to spend considerable money on research to improve the quality of refractories.

20 Heats Less

With the continued drive for higher tons per hour and greater total tonnages, it became obvious in late 1952 and early 1953 that the roofs were cutting out along the front skewbacks with a resultant decrease of approximately 20 heats in roof life.

In an effort to correct this condition, zebra wearing sections 30 inches in depth were installed along the front skewbacks of the roof. This proved satisfactory and the roof life showed marked improvement. In 1954, roof life in No. 1 shop at the Cleveland District increased 36 heats over the 1952 average, while in No. 2 shop the increase during the same period was 44 heats.

Although this was a considerable improvement, they felt it necessary to search for refractory materials that

(Continued on page 106)

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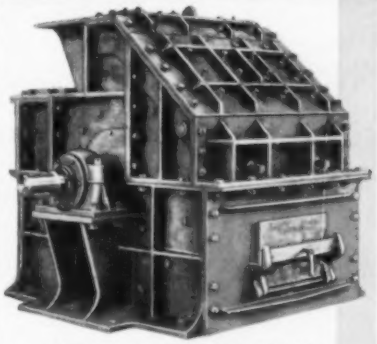

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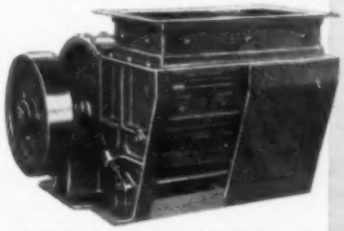

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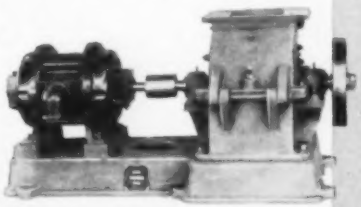

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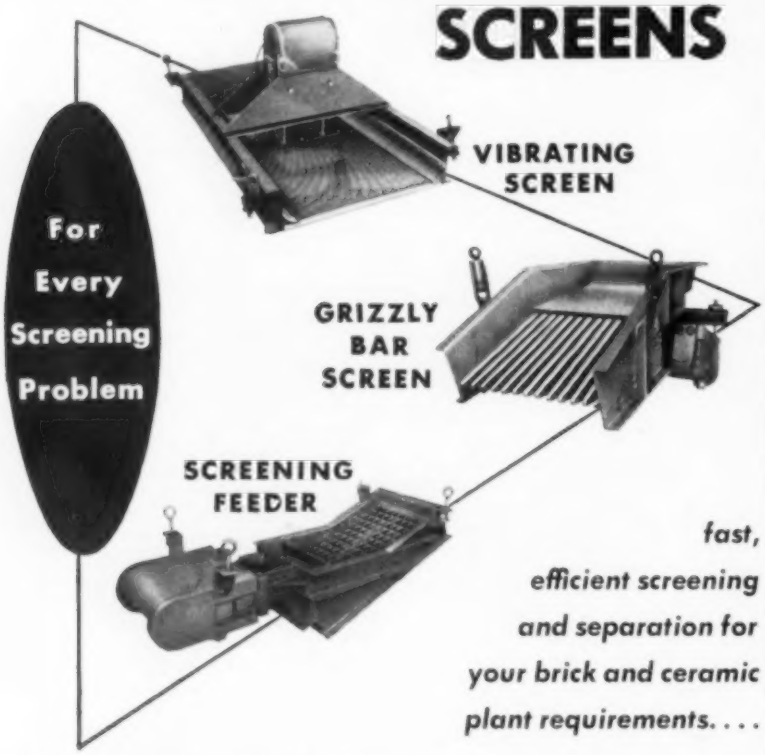
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OPEN HEARTH Continued

would enable them not only to increase roof life but also to assist in increasing over-all furnace life while pushing for higher temperatures, to gain less heat time and greater tons per hour.

Electrocast Chrome-Mag

A thorough study was made of the various types of basic brick available for use in steel mill furnaces. It was noticed in the conventional chrome magnesite and magnesite chrome brick normally used in open hearth furnaces that during the past ten years there had been very little change, if any, in the chemical composition of this material.

In most cases this material gave many of the desirable things lacking in silica brick. One type of material, namely the electrocast magnesite-chrome brick, had some application in the hearth of the electric furnace and slag line of open hearth furnaces, but had never been tried in the roof of Republic's open hearth furnaces. It was pointed out that some five or six years ago Republic was experimenting with oxygen in the bath of the furnace which resulted in extremely poor roof life. Electrocast brick was considered for the roof at the time, but it was discarded due to extremely high cost—ten times greater than that of conventional basic brick.

High Density

Chemical composition of electrocast brick is somewhat similar to conventional basic brick, but it does possess the remarkable property of extremely high density as well as considerably higher compressive strength at high temperature. The high density of electrocast brick in turn gives greater thermal conductivity.

The first tests were started in January, 1955, at which time seven test rings of 13½" electrocast chrome magnesite brick were installed in the center section of one open hearth furnace. Four of the seven rings were installed in one section, the other three rings at alternates to silica, similar to zebra-type construction.

The rest of the roof was standard silica and metal-encased basic bricks of the standard zebra construction. The silica portion of this roof was repaired three times; the electrocast section required no repairing. After 142 heats the electrocast section was found to be approximately 8" thick.

When 200 heats were obtained it was necessary to replace the entire roof due to the failure of the silica portion.

The results obtained on this roof indicated further possibilities in the use of electrocast chrome magnesite brick, but in the interest of economy it was felt that the roof should be constructed of alternate rings of electrocast and silica brick or possibly two rings of silica to one ring of electrocast brick.

(Continued on page 108)

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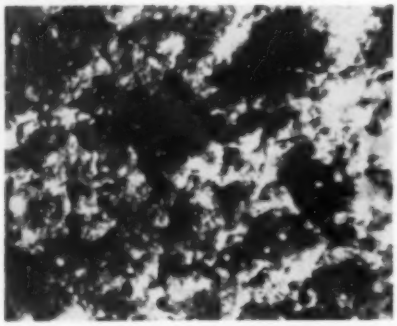

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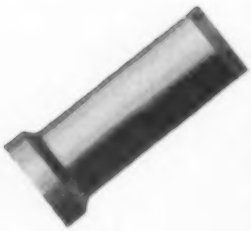

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OPEN HEARTH Continued

In March, 1955, another experimental roof consisting of a combination of electrocast and silica bricks was installed from knuckle to knuckle in a different furnace. A section of No. 3 door was installed with two rings of silica to one ring of electrocast brick. The remainder of the roof was installed with alternate rings of silica and electrocast bricks. 181 heats were obtained from this roof with no repair.

Second Test

Buckling of this heavy roof over No. 3 door necessitated shutting down this furnace. They continued to test this material, and in May, 1955, installed a roof on a third furnace, using alternate rings of electrocast and silica brick. Conventional metal-encased brick was used next to the front and back skewback, producing an all-basic wearing strip.

This furnace was pushed considerably harder than the other two furnaces with the result that the silica brick eroded badly early in the campaign, weakening the entire roof. Roof patching at 118 heats proved to be of little value. The furnace was shut down at 122 heats.

Higher Conductivity

An analysis of the wear pattern of this roof indicated that the electrocast material behaves somewhat similarly to conventional basic brick. Its higher conductivity enables it to conduct the heat away from the adjoining silica brick, and its high density-low porosity condition retards the action of iron oxide.

It was noticed that every time silica rings were washed or burnt out the electrocast rings tended to peel or spall a few heats later.

Increase Electrocast

Fundamentally, the use of electrocast material with silica brick gives results quite similar to those of conventional basic and silica bricks, namely the zebra roof. A slightly higher operating roof temperature is permitted due to higher conductivity, but it is limited to the maximum temperature permissible with silica material. In view of this fact, it was further decided to reduce the amount of silica and increase the amount of electrocast basic brick.

All-Basic Roof

These results, together with those from the first experiment on the first test furnace, further pointed to the fact that the answer could be found in an all-basic roof. To confirm this opinion, the roof over Nos. 2,3 and 4 doors on the second test furnace was installed entirely of electrocast blocks, including the roof skewbacks. The balance of the roof was silica brick, zebra construction.

At 166 heats it was necessary to repair the silica roof over No. 1 and No. 5 doors. The fuel was off the furnace 6 hours and 50 minutes to effect the repair, and the furnace relighted.

There were 185 heats on the roof when this furnace was shut down due to the steel strike. After the strike it was necessary to rebuild the furnace because of failure of the port ends during the prolonged shutdown. All of the silica roof, including the port ends, was replaced, but the electrocast material was braced and left intact. The checkers were cleaned and retopped. The total down time on this furnace was seven weeks and four days.

Two months later, it was necessary to repair the silica roof over No. 1 and No. 5 doors, as well as the front wall. At this time the silica section had reached 92 heats and the electrocast section, 277 heats. The furnace completed its campaign 12 days later with a total of 299 heats with no repair having been made to the electrocast section.

All Electrocast

The roof of a sixth furnace was constructed entirely of electrocast from end to end. The roof showed no wear until 60 heats was reached. At that time only some roughness on the surface of the brick occured.

At 75 heats no apparent wear had occurred but the roughness was still apparent.

Normally, zebra roofs at this stage show considerable wear and require patching back and front within 90 to 100 heats.

It is still too early to draw a positive conclusion, but there are indications which point to the fact that electrocast, or a slight variation of its present chemical composition will prove better than the combination silica and basic brick type construction.

Conclusions

The results of the tests lead to the conclusion that the use of electrocast brick with or without steel plates in combination with silica brick gives results somewhat similar to those of combination with silica brick. The added strength would permit greater quantities of electrocast to be used. The higher density would tend to retard the chemical action resulting in eventual spalling or peeling. The economics of this type of construction is unknown. Longer roof life was denoted, but this is not sufficient to offset the higher initial cost.

There are some indications that a full roof construction will be economically sound; however, this test of a full roof has not advanced to the point that definite conclusions relative to its overall life can be drawn. As pointed out above, the initial trial of basic checkers was unsatisfactory due to excessive spalling.

COMPLETE MECHANIZED HANDLING —THE KEY TO LOWER COST

Picking up a unit load of green brick.

Setting a hack for field drying.

Field kiln is set and drawn with Bickerstaff fork.

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Truck then takes hacks to an outdoor area for "field drying", and from there to take their place in a "field kiln". From field kiln, they go to storage — and then to waiting customer delivery trucks. The only manual operation is the building of the unit load itself, except in the case of banded brick. Here the bricks are stacked manually on a pallet and banded.

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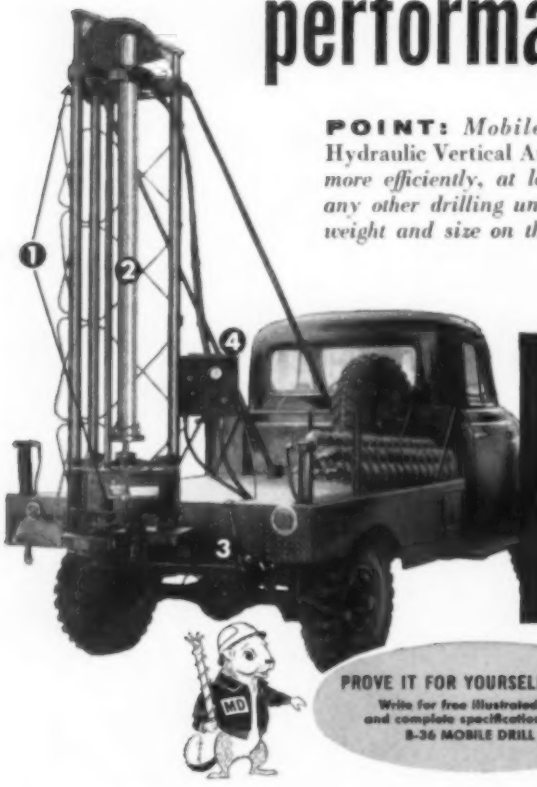

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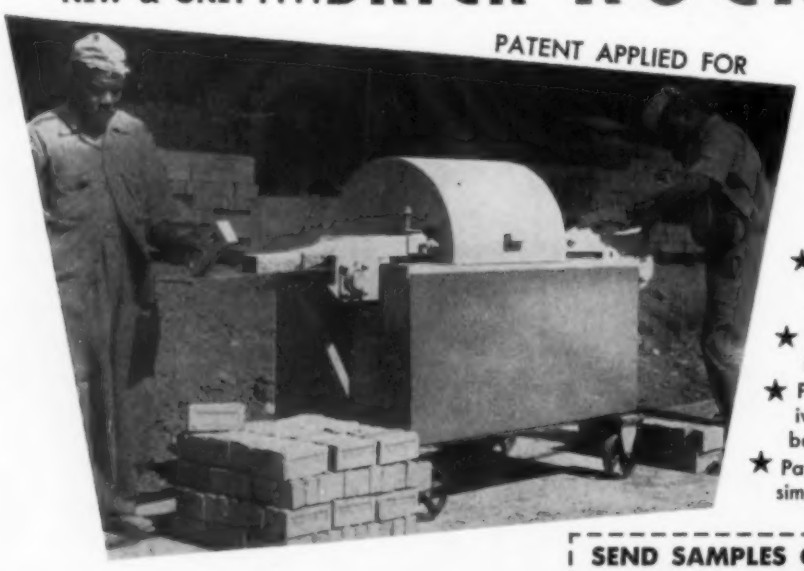

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GLAZE, Continued

Ceramic reactions are surface-dependent, meaning they are influenced by surface area of the reacting materials. The fineness or particle size distribution of constituents in glaze slips thus becomes quite important. The ultimate fineness is dependent upon the initial size and ease of comminution of the materials selected, and upon the extent of milling or disintegration in processing.

Few Immune to Fineness Factor

Few if any glazes are immune to the fineness factor. Changes in fineness of a single raw material or the entire batch can and probably will alter glaze behavior. For example, a change in the milling time of a glaze may well affect the maturing behavior, gloss, pinholing, crazing and crawling.

Each glaze probably has an optimum fineness range. This fineness should be determined and thereafter controlled. A simple screen test or an arbitrary milling time is not enough. Glaze fineness control implies a control of the batch constituents, control of the mill charge (batch, water and grinding media), and control of the milling operations.

To anyone doubting the importance of glaze fineness, it is suggested that a standard glaze be milled for varying periods from one to 24 or 48 hours, and compared. The results may prove surprising.

Influence of Ware

It is but logical that the character of the ware to be glazed will influence the ultimate glazing result. Both chemical and physical factors are involved. The chemical and mineral composition of the body itself must first be considered if a compatible glaze-body combination is to result. There are countless reports of a glaze used successfully on one body failing on another. This applies to bodies of similar as well as dissimilar type. Even though some glazes may be suitable for more than one body, it will usually be necessary to modify glazes for different bodies.

Chemically compatible glazes and bodies are those which are just sufficiently different to develop a desirable degree of glaze-body interfacial reaction, no more and no less. Excessive reaction may lead to the body's completely "soaking up" the glaze or to other defects; too little reaction results in poor adherence and may also induce poor mechanical performance.

In regard to glaze fit, which is so important in the control of crazing, shivering and ware strength, three glaze-body factors are important. There are degree of interfacial reaction, the change in glaze composition through reaction and the relative thermal contractions of body and glaze during cooling. Each is obviously related to the body as well as the glaze.

Contamination Causes Defects

Surface contamination with oil, dust, plaster or other foreign material will usually cause glaze defects. Coarse-textured surfaces or surfaces having scratches, pits or tool marks

Continued on page 113

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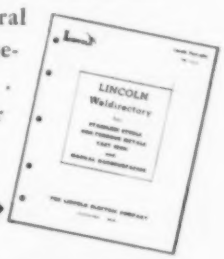

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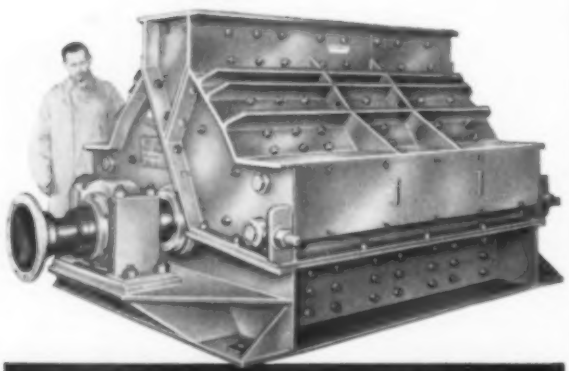

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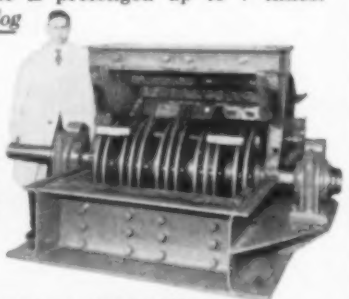

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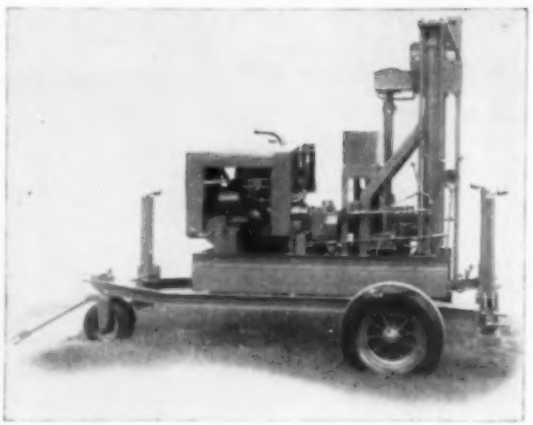

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GLAZE, Continued

are more difficult to cover uniformly.

It is rather obvious that many ware factors, both chemical and physical, are related to glaze character. Ware (including surface) variations thus merit attention in analyzing glaze problems.

Glaze Application Factors

A related factor of great importance is the thickness of glaze coating applied. Since most glaze characteristics are influenced by glaze thickness, this factor should not be left to chance or personal judgment. A glaze which is too thin may exhibit eggshelling, poor gloss or insufficient masking power. One which is too heavy may craze, crawl, pinhole or flow. The optimum glaze thickness for best over-all results should be determined for each glaze-body combination, and then controlled within acceptable limits.

Since results will vary as the application technique varies, be it intentional or otherwise, glaze diagnosis certainly requires an understanding of application factors.

Obviously the manner in which the glaze (and body) are fired can markedly affect glaze character. Here the important considerations include method of kiln placing, rate of heating, soaking period, kiln atmosphere and, last but not least, rate of cooling.

Too seldom is a glaze firing cycle designed to yield optimum glaze results. Yet it is known that many common defects stem alone from improper firing. Pinholing or eggshelling can, for example, result from firing at too low or too high a temperature, or from improper soaking treatment. Crawling may result from cracks developed in the heating cycle. Crazing and poor mechanical fit may result in a glaze that is fired insufficiently.

Increase Firing Temperature

They may sometimes be corrected simply by increasing the firing temperature. Gloss and matteness may vary with the rate of cooling, as may glaze fit and the tendency to craze.

It is thus seen that the uniform production of glazes demands control of the entire firing cycle. Likewise a diagnosis of glaze problems can scarcely afford to disregard the effect of firing variations.

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OCHS, Continued

supplying air at 22 oz. pressure and one is a 2700 cu. ft. per minute blower, supplying air at 16 oz. pressure.

Three of the periodic kilns will very shortly be completely rebuilt, using insulating firebrick. One kiln was built with a 9" layer of insulating firebrick in the crown and in the sidewalls and the fuel saving jumped immediately to 20%. On the basis of this improvement, all the kilns eventually will be converted to insulating firebrick. The insulated periodics will all be built according to the findings reported two years ago by Babcock & Wilcox engineers.

All-Steel Building

The new building, housing the tunnel kiln, dryer, hacking line and shipping area, is of all-steel spanless beam construction, and is 443' long, 50' wide and 27' high. The building was planned so that packaging and shipping could be handled directly from this end of the production line. Ochs Brick & Tile has a very complete packaging line which will be reported on the Packaging Section of BRICK & CLAY RECORD.

One of the men responsible for the fine operation at Ochs is the vice president and plant superintendent, Ollie Bishop. He is assisting Elmer Apt in making Och's one of the finest plants in the Midwest.

TRADE NEWS

R. S. Stevenson, president of **Allis-Chalmers Mfg. Co.**, Milwaukee, Wis. said at a meeting in Kansas City, Mo., that sales volume for A-C will set another new record in 1957 and net earnings should be higher than last year's.

R. A. Weaver, Chairman of the Board, **Ferro Corp.**, Cleveland, Ohio, has announced the resignation of Dr. Glenn H. McIntyre, Vice President and Technical Director, to manage the National Spectrographic Laboratories, Inc., of Cleveland. Dr. McIntyre has been with Ferro for the past thirty years.

Appointment of Thomas E. Wood to Director of Programming and Development was announced by **Flick-Reedy Corp.**, Melrose Park, Ill.

Yale Materials Handling Div., **The Yale & Towne Mfg. Co.**, Philadelphia, Pa., has announced the establishment of industrial lift truck sales and service sub-branches in Baltimore, Md., and Harrisburg, Pa., operating under the Philadelphia branch.

The Buffalo, N. Y., Industrial and Steel Sales office of the **Timken Roller Bearing Co.**, Canton, Ohio, is being moved to a new building in Buffalo in May.

A new plant costing over one million dollars is being planned by **Sherwin-Williams Co.** The new facility will be built adjacent to the company's barium carbonate plant at Coffeyville, Kansas, and will produce barium monohydrate, one use of which is in the manufacture of lubricating oil additives.

Acme Steel Co. has moved its General Offices into their new office building at 135th and Perry Avenue, Chicago 27, Illinois. The move completes the consolidation of administrative, manufacturing, sales, service and office facilities in the Riverdale area.

Clark Equipment Co., has appointed Steve Ragsdale manager of development of its Materials Handling Development Center, according to L. A. DePolis, general sales manager of Clark's Industrial Truck Division.

John H. Kolstad of **Interkiln-Salgo Engineering Co.**, Atlanta, Ga., has been promoted from Chief Engineer to Vice-President.

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THERE'S A PLACE IN YOUR PLANT
FOR IMPROVEMENT THRU HYDRAULICS

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- Mechanize Hacking Tracks
- Provide Power To Remove Kiln Car From Transfer Car
- Discharge Dryer From Transfer Car
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Forrest A. Paschal
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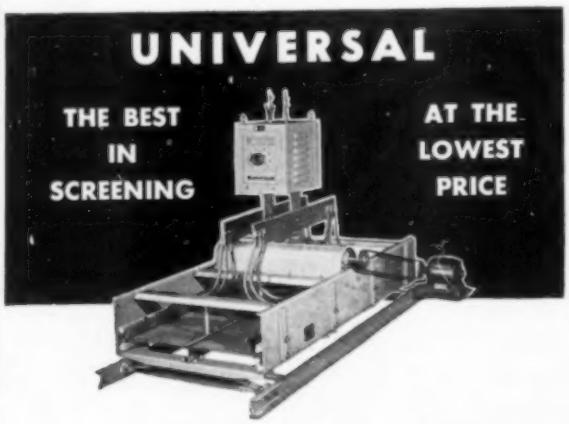

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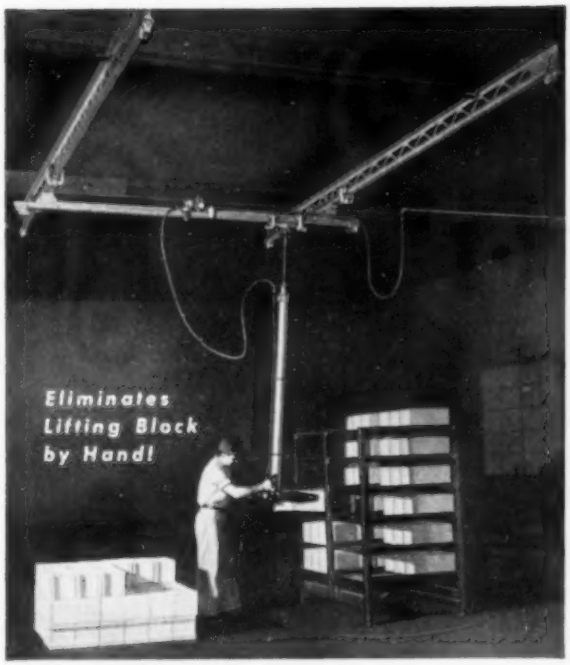

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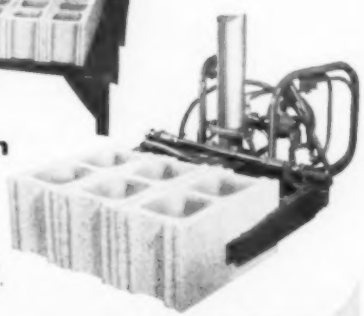
BLOCK CUBER

Now — you can eliminate the old-fashioned method of lifting block . . . one at a time . . . by hand. The Besser Bridge Crane Block Cuber builds a cube for convenient fork lift truck transportation to storage yard. Operator merely guides the easy, rolling crane which carries the block to the correct position for making a neat, square cube. Pays for itself through labor savings in a short time. Simplifies inventory count. Permits neat stockpiling. Saves yard space.

Write for Bulletin No. 103.

Cubing platform

Open grating of welded all-steel construction. Self-cleaning, with guide for perfect alignment of block. Note how easily 3 blocks are tipped over, in a single motion for first course.



Combination clamp

Simplifies handling of block or brick from rack to cube. Convenient control levers eliminate finger fatigue . . . make it easy to remove block from highest and lowest deck.

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Complete Equipment for Concrete Block Plants

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A7-125

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HIGHEST QUALITY

TC HYDRO is a dry, white, free flowing, crystalline powder of uniform size and structure. It is dust-free, assuring highest stability and uniformity.

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TENNESSEE CORPORATION

TENNESSEE CORPORATION

617-629 Grant Building, Atlanta, Ga.

free flow...
AND
HIGH PURITY
for better
scum control
Free dry-flow properties are a must with barium carbonate—but freedom from impurities is important too in obtaining maximum reactive effect and avoiding residues.
Sherwin-Williams OZARK Grade 50F Barium Carbonate is specially processed to meet both of these needs for effective control of scum and efflorescence in the brick and tile industry. Exceptionally low bulk density gives OZARK free flow and uniform distribution. High 99.1% purity produces high reactivity.
Other grades for glass manufacture and many other applications. Write, or use coupon below, for technical bulletin covering properties and analyses.
BARIUM CARBONATE

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PIGMENT COLOR & CHEMICAL DIVISION

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300 W. Lake St., Chicago 6, Ill.
Please send technical bulletin on barium carbonate.

NAME_____

COMPANY_____

ADDRESS_____

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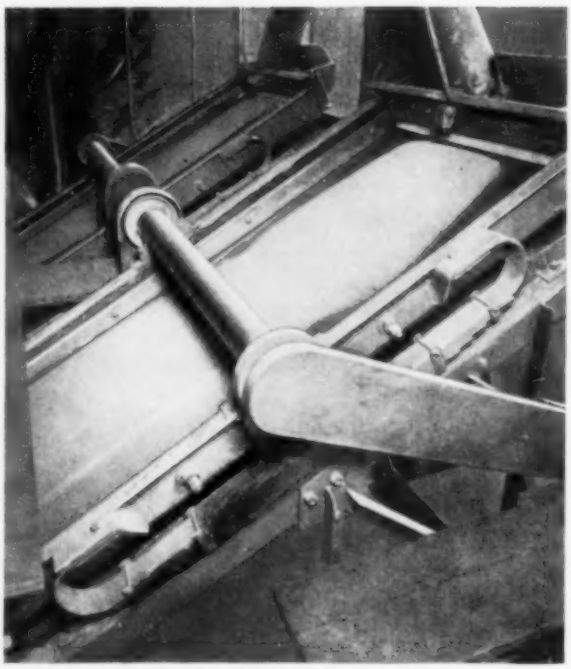
size fine materials

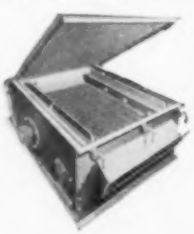


TWO LINK-BELT "UP" SCREENS accurately segregate oversize from raw and calcined fire clays at this firebrick plant.

Vigorous action of LINK-BELT "UP" vibrating screens sharply separates oversize from near mesh

WHEN small differences in material size make a big difference in product uniformity, put the problem up to Link-Belt "UP" vibrating screens. High-velocity action quickly stratifies the load . . . sizes closely through small screen openings without blinding.

High-intensity, circular motion is imparted by a simple, two-bearing vibrator that can be adjusted to the amplitude of highest effectiveness. Equally important, this mechanism is fully enclosed for protection from heat, moisture and abrasive dust.



FOR DUST-TIGHT OPERATION Link-Belt "UP" vibrating screens are available in semi- and totally-enclosed types to eliminate dirt nuisance and dust damage. See your nearest Link-Belt office—or write direct—for data Book 2377-A.

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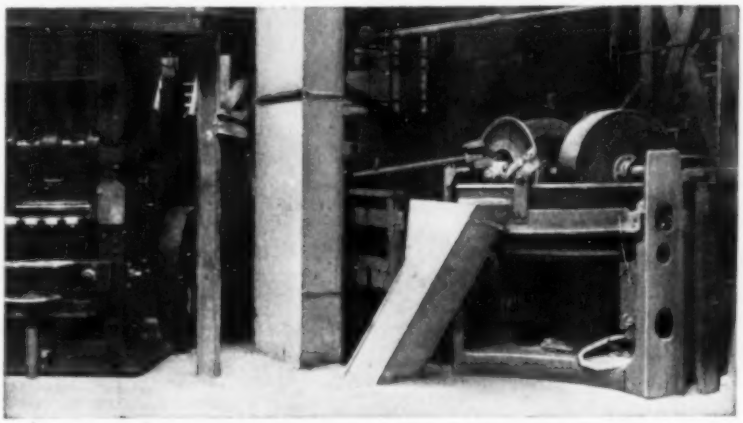
VIBRATING SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,522

THE CLEARFIELD MIXER



No. 610 Clearfield preparing dry press material in fire brick plant.

Write today for Bulletin C-5 for complete information.

For Ceramic and Refractory Materials

In preparing clay materials for use in ceramic and refractory plants, the Clearfield Mixer with the revolving bottom is the most efficient and economical means of blending and tempering. Dry, semi-dry and high moisture content mixes are produced with thorough diffusion of all components of the batch. There is no segregation of larger or smaller parts. A uniform, even-textured clay mixture is produced with no lumps or voids. If you have a mixing problem, contact us for technical assistance.

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"TOP BRAND ON THE TOTEM POLE"

HOMMEL FRITS and STAINS are needed in your GLAZED BRICK or TILE

GLAZE FRITS and BODY, ENGOBE and GLAZE STAINS are made to meet all requirements . . . with wide firing range and stability at high fires. Laboratory controlled. Write or phone . . .

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"We just couldn't do without our Gravelys" . . . write important brick and tile manufacturers who've been using them for years for moving kiln cars in and out of kilns and to other stations.

The Gravely LS Tractor — geared-down 5-HP, low-speed model, with dual wheels and governor — is the answer. It's small enough to work in crowded areas, yet powerful enough to move loaded cars up to 310,000 lbs. Toolholder fits coupling unit on cars. Two speeds forward and reverse allow operator to move cars in either direction.

But that's not all! The same Gravely, offering 30 different attachments, takes care of every ground maintenance job, from mowing lawn areas to power sweeping loading docks and drives. Eliminates expensive equipment, saves time, labor, money.

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The Demand Is Increasing For
GRAY BRICK and RICHER DARK RED SHADES

"NATIONAL" MANGANESE

Turn Buff and Light Clays Gray

Flashes Red Clays to Dark Reds, Blacks and Gun Metal Shades

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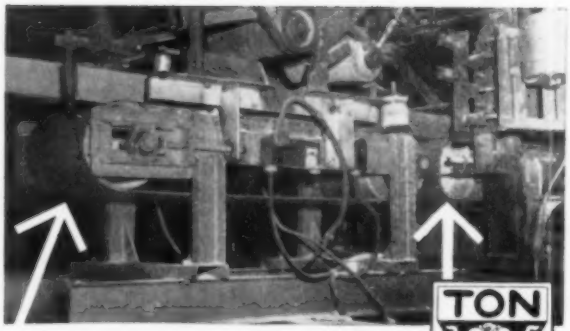

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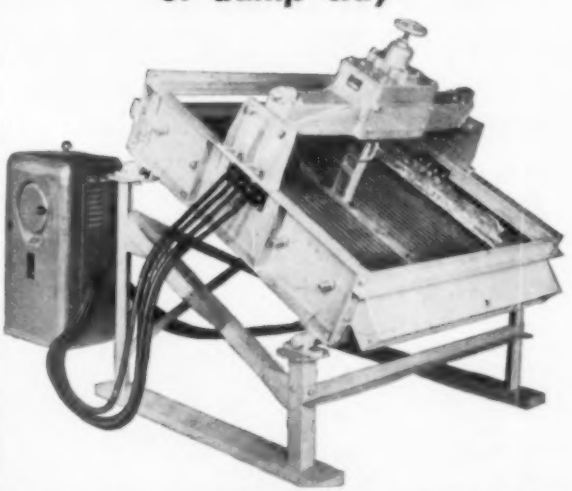
HUM-MER SCREEN
WITH
TY-ELECTRIC HEATER

"for efficient screening of damp clay"



THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO

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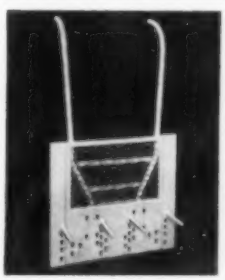
*See our catalog in 1956-57 Ceramic Data Book.

Reduce Loading Costs!



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The Flink Hand Fork Truck is the key to the cost-cutting, volume-building Schaefer Packaging Method! With a Flink Hand Fork Truck, one man can load a freight car or truck with "packs" *in half the time needed by two men handling loose brick with tongs!* It maneuvers easily into tight corners and a simple resetting of the forks lets this truck handle *any* materials package. *Write for complete information.*

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stepped up drive efficiency— less maintenance

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Notice

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Effective January 1, 1957

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5 South Wabash Avenue, Chicago 3

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Address 1-YC, care of BRICK & CLAY RECORD

WANTED CERAMIC ENGINEER with experience in steel plant refractories to represent midwest producer in the Chicago District. No selling experience needed. An excellent opportunity with a growing concern. Please submit details including experience, education, personal data, salary requirements. Address 1YE care of BRICK & CLAY RECORD.

WANTED—CERAMIC ENGINEER by Sewer Pipe Manufacturer with one plant of substantial capacity. Advise age experience, salary desired, also references. Address 5-TA, care of BRICK & CLAY RECORD.

WANTED CERAMIC ENGINEER—with established concern. Over quarter century successful manufacturing quality face brick and facing tile. Young man with experience in glazing and all phases of manufacture. Excellent opportunity. Address 10-XAD, care of Brick & Clay Record.

WANTED—SUPERINTENDENT with tunnel kiln experience for modern face brick plant with annual capacity 40,000,000 brick. Excellent opportunity to become associated with old established firm with profit sharing plan. Address 5-TI, care of BRICK & CLAY RECORD.

WANTED — SUPERINTENDENT experienced in production of Face Brick and structural tile. Replies confidential. Address 5-TG, care of BRICK & CLAY RECORD.

WANTED—MANAGER for brick factory in Ohio producing 2,000,000 per month, good salary, opportunity for experienced man or experienced ceramic engineer. Address 5-TC, care of BRICK & CLAY RECORD.

WANTED — EXPERIENCED SHIPPER of structural clay products. New plant. Mechanized operation. Own fleet of new trucks. Steady employment. Good opportunity for growth with new company. Close to metropolitan areas. New Jersey Shale Brick & Tile Corporation, P.O. Box 249, Somerville, New Jersey.

WANTED — POSITION

SUPERINTENDENT OR GENERAL MANAGER, Twenty years experience in production and marketing Common Brick, Face Brick and Hollow Building Tile in shale and clay. Qualified from pit through the organization. Promptly available. Best of references. Address 4-UD, care of BRICK & CLAY RECORD.

GRADUATE CERAMIC ENGINEER—age 33, 8 years experience in all phases of Fire Brick and Floor Tile production. Extensive tunnel kiln experience. Desire job as superintendent, or plant production manager. Address 5-TB, care of BRICK & CLAY RECORD.

SUPERINTENDENT of Face Brick and Tile plant with a daily output of 100,000 desires change. Experienced in all phases of production, construction of periodic kilns, dryers, know machinery, and burning and flashing with gas. Thirty years experience, last ten as Superintendent. Age fifty one, healthy. Address 5-TE, care of BRICK & CLAY RECORD.

REFRACTORY SALESMAN—with experience in sales management. 15 years with one of the leading fire brick manufacturers. Contacts in the steel industry in Pittsburgh, Youngstown, Chicago and Kansas City districts. At present located in Chicago. Address 5-TD, care of BRICK & CLAY RECORD.

FOR SALE PLANT

FOR SALE—Western Brick Plant. Address 5-TJ, care of BRICK & CLAY RECORD.

FOR SALE—USED EQUIPMENT

FOR SALE — 1 Kent Ring-Roll type #7 Maxecon Mill, with 6" double Y feeder, including 40 H.P. Motor and 50.0 8 C sheave, V belt drive. Address 5-TF, care of BRICK & CLAY RECORD.

FOR SALE — USED CLAY MINE EQUIPMENT, approximately 1245 feet of 35#, 720 feet #25, 4244 feet 20#, 100 feet 80# rail. Two model 12-B Eimco rocker shovel loaders, 36" gauge, air operated, in good running condition. Four Chicago pneumatic electric coal drills, 220-volt, 60 cycle, 3 phase. Two "Jim-Crowe" rail benders. One Fairbanks Morse platform scale. One lot mine car wheels and bearings. Cannelton Sewer Pipe Company, Cannelton, Indiana.

FOR SALE

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FEEDERS — 36" MECO Reciprocating.
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CUTTERS — Steele 18B extra reels.
REPRESS — Bonnot special.
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NEW & USED Equipment for brick tile and pottery.

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FOR SALE—Model BB Boyd Dry Press in excellent condition together with set of press boxes to make complete lines of fire brick shapes, $10,000. Union Mining Co., 1711 1st National Bank Bldg., Pittsburgh 22, Pa.

FOR SALE

BRICK MACHINES—All types
PUG MILLS—Single & Double Shaft
GRANULATOR—Freese P16, Chambers No. 51
AUTOMATIC CUTTERS—Steele 18, American 498, Freese C-20 & C-25, End Cutter, Drain Tile
HAND CUTTERS—Steele 50, Board Delivery

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DRY PANS 7' & 9'
HAMMER MILLS—Jeffrey 20x24, 36x42
SMOOTH ROLLS—Chambers 16x30, 18"x24"
CONICAL ROLLS—Brewer 22", Chambers 32"
DISINTEGRATORS — Chambers 16", Steele 12", 18"
JAW CRUSHERS—15 x 24, 20 x 4, 20 x 36, 30 x 36, 56" x 72"
PULVERIZERS—Williams Comet Dust Mill; Raymond Lab Size
ROTARY DRYERS & KILNS
DRY MIXERS—Lancaster EBG-3, EAG-3, SKG, EAG-4, Simpson 1½, 2, 3.
SCREENS—Hummer 3 x 5 & 4 x 5 Single, 3' x 10' Double, Selecto 3 x 6, Slip Lawns
REPRESS 2 MOULD—Bonnot "Special" & International Victor
CLAY FEEDERS—Disc 48" & 60", Steele Even, 36" Reciprocating
DRYER CARS—Transfer Cars.
TURNTABLES—72"
SIDE DUMP CARS—2 yd. 36" gauge, 1 yd. 24"
PEBBLE MILLS—30 x 42", 4 x 5', 6 x 8', Hardinge 7' x 22", 7' x 48", 4½' x 16"
BALL MILLS—Hardinge 6' x 22", 6' x 36", 10' x 48", 2' x 8", 5' x 21' Tube Mill
STEEL PALLETS—10 x 24", 10 x 41", 14 x 20"
SLIP PUMPS—2 & 4 Cylinder
FILTER PRESSES—13, 32, 60, 70 Leaf
SAGGER PRESSES—#2 Crossley with Dies
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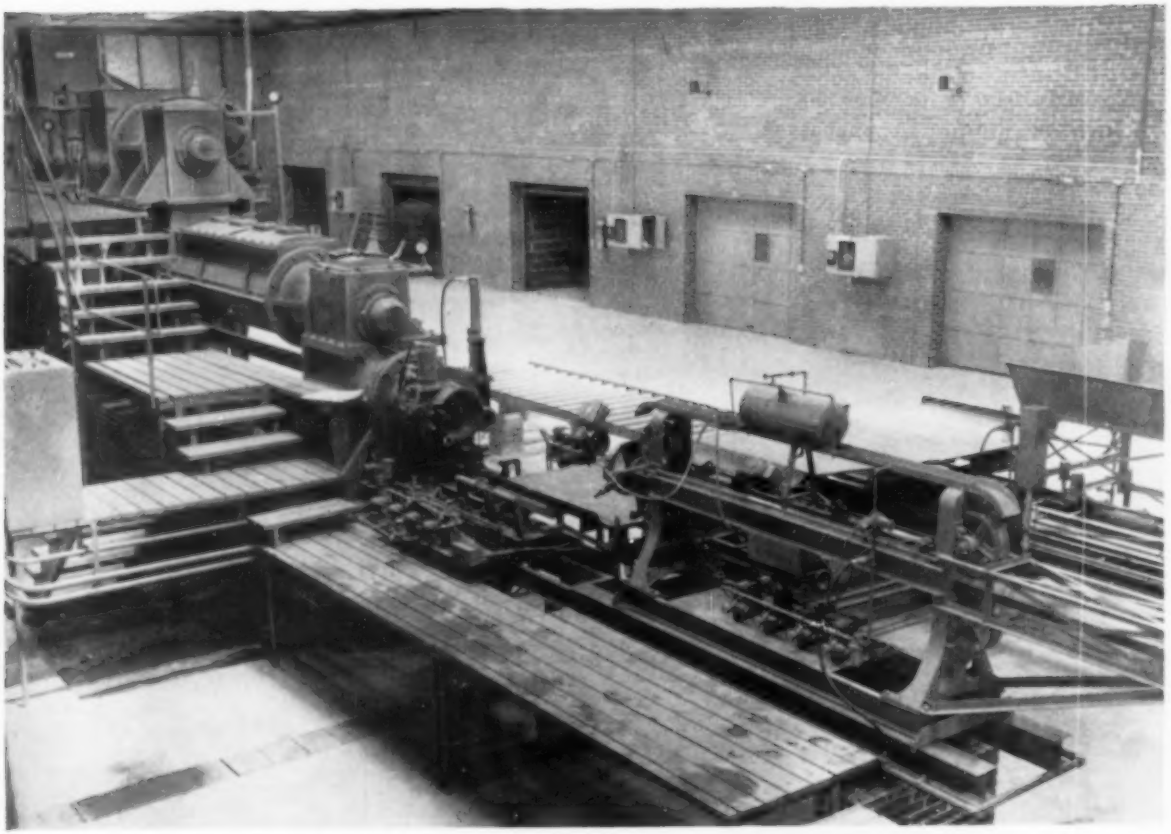

(Shown here is a new line of Steele machinery in a pipe plant which has used Steele equipment for over thirty years. Photograph was taken April 15, 1957 just before the new line went into production.)

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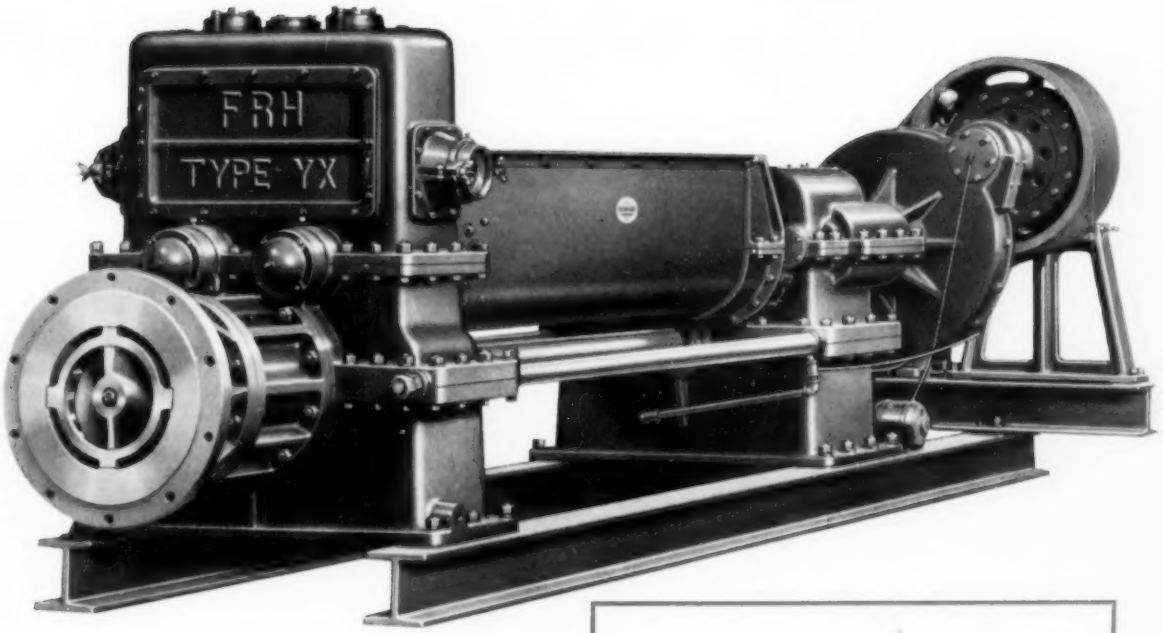

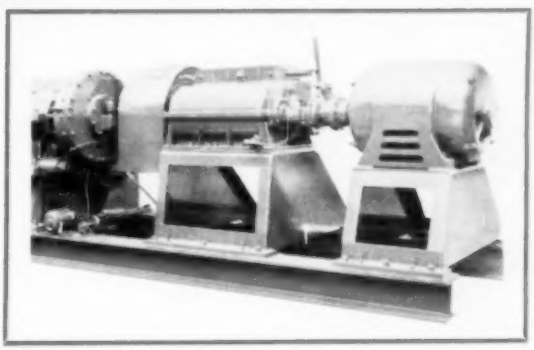

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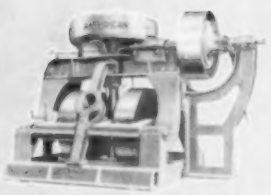

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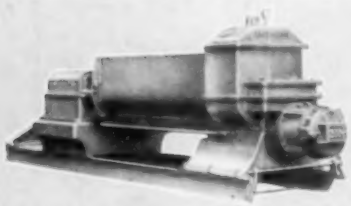

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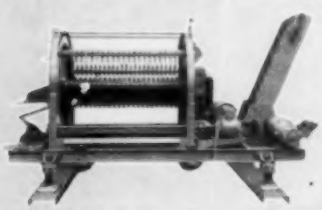

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